Total vegetation cover soil protection **Region:NRM Hunter NSW**

Date: January 2002

This report describes vegetation protecting the soil surface from erosion during a chosen month compared to previous years. This report has been generated using MODIS fractional vegetation cover information available in Rangelands and Pasture Productivity (RAPP) map tool https://map.geo-rapp.org/#australia. The report is based on 500 metre pixel data on monthly time steps. Land use forest cover:

Results can be shown for the whole region (polygon), and separated by land use and forest cover classes which are likely to show different cover patterns and targets. Land use is divided into four broad classes: Conservation and natural environments, Agriculture, production native forests and plantation forests (no report), and other (no report). Agriculture is divided into grazing, crops and horticulture which are sub-divided into non-irrigated and irrigated. If forest is present land use is further divided into: non-forest, woodland forest and non-woodland forest. The area of each land use and forest class are shown as a map and chart. The report content is repeated for each land use and forest cover class that covers at least 1% of the area of the chosen region. Total vegetation Cover:

The total vegetation cover indicates where soil is likely to be protected from wind and or water hillslope erosion. Total vegetation cover for this month is shown on a map and chart classified into 4 classes.

- 71-100% High cover protected from wind and usually water erosion (high rainfall, steep slopes, and erodible soils may need greater than 80, 90, 95 and up to 100% cover)
 - 51-70% Moderate cover protected from wind erosion
 - 31-50% Low cover not protected
 - 0-30% Very Low cover not protected

Erosion protection: Wind erosion 50% total vegetation cover

The vegetation cover threshold required to prevent soil erosion is usually 50% to reduce wind erosion, 70% or 80% to reduce water (hillslope) erosion depending on the steepness and rainfall. Areas protected from erosion for the month:

- Map: water erosion protection (>70% cover) percentage area and hectares.
- Map: wind erosion protection (>50% cover) percentage area and hectares.

Comparison with previous years:

- Map: anomaly comparing this month to the average cover from the same month in previous years.
- Map: deciles rank of month against the same month in previous years.

Anomalies and deciles until September 2019 are calculated comparing to the same months 2001 to 2019. Extra monthly data will be used to calculate anomalies and deciles post September 2019 as they become available. Time series monthly from January 2001 to current:

Erosion protection

- Wind erosion protection time series: percentage of the area of the region with greater than 50% cover for each month (orange lines). Horizontal lines are 10th (cover target) and 50th percentiles.
- Water erosion protection time series: percentage of the area of the region with greater than 70% cover for each month (blue line). Horizontal lines are 10th (cover target) and 50th percentiles.

Rainfall

• Millimetres rainfall each month (black line).

Each time series is also stacked by year. The black line shows the current year of data. Water erosion protection for higher rainfall and steeper slopes:

Water erosion protection on higher slopes. As slope increases, more cover is required to control water erosion. The thresholds reported are:

- the percentage area with pixels greater than 80% total cover.
- the percentage area with pixels greater than 90% total cover.
- the percentage area with pixels greater than 95% total cover.

Acknowledgment of data:

- 1. http://www.agriculture.gov.au/abares/aclump/land-use/alum-classification
- 2. http://www.agriculture.gov.au/abares/forestsaustralia/sofr/sofr-2018
- 3. https://www.dpi.nsw.gov.au/agriculture/pastures-and-rangelands/establishment-mgmt/production-management2/groundcover
- 4. MODIS Fractional cover algorithm:

https://doi.org/10.4225/08/5848a3f19a7b3











Vegetation Cover Jan 2002

10 Agriculture - Horticulture - Non-irrigated

12 Production native forests and plantation

11 Agriculture - Horticulture - Irrigated

13 Other uses

Legend with land class forest cover and number, i.e. Forests is 12 1 Conservation and natural environments - Non-forest 2 Conservation and natural environments - Woodland forest 3 Conservation and natural environments - Non-Woodland forest 4 Agriculture - Grazing - Non-forest 5 Agriculture - Grazing - Woodland forest 6 Agriculture - Grazing - Non-woodland forest 7 Agriculture - Grazing - Irrigated 8 Agriculture - Cropping - Non-irrigated 9 Agriculture - Cropping - Irrigated

36.9% 30 -25 -(8) 20 -15 -10 -5 -4.2% 36.9% 36.9% 30.9%

Proportion of each land class in area

Total Variation Cover [0/1

Catchment Scale Land Use and Forests

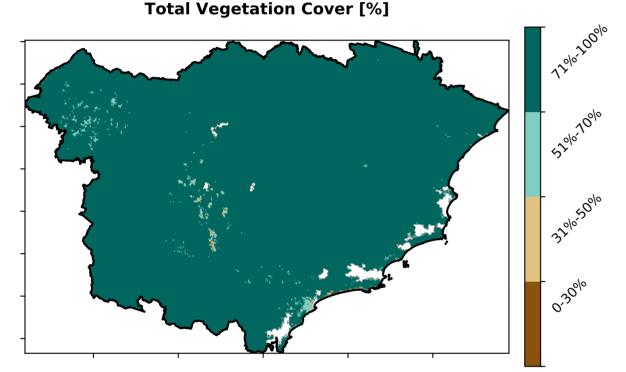
Catchment Scale Land

of Australia (2018)

Derived from

Use of Australia

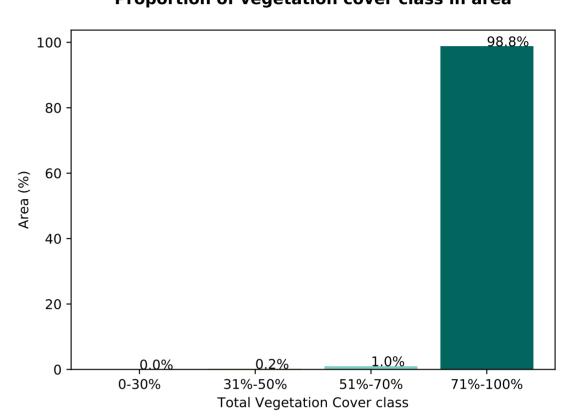
(2018) and Forests of Australia (2018)



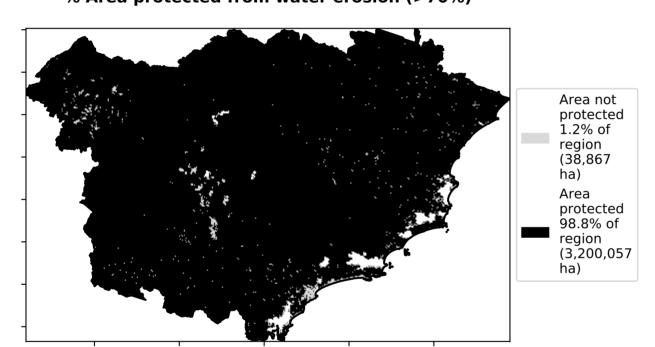
Proportion of vegetation cover class in area

Land use class

10 11 12 13



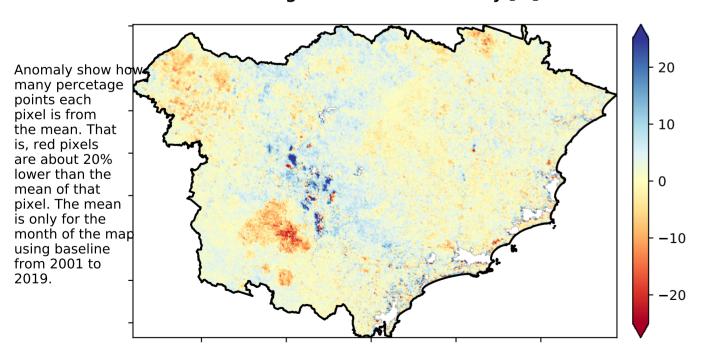
% Area protected from water erosion (>70%)



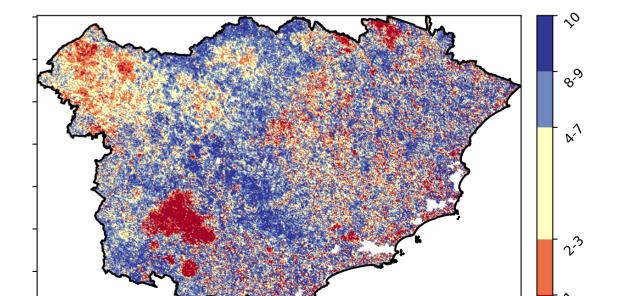
% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]



Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.



Total Vegetation Cover Decile [%]



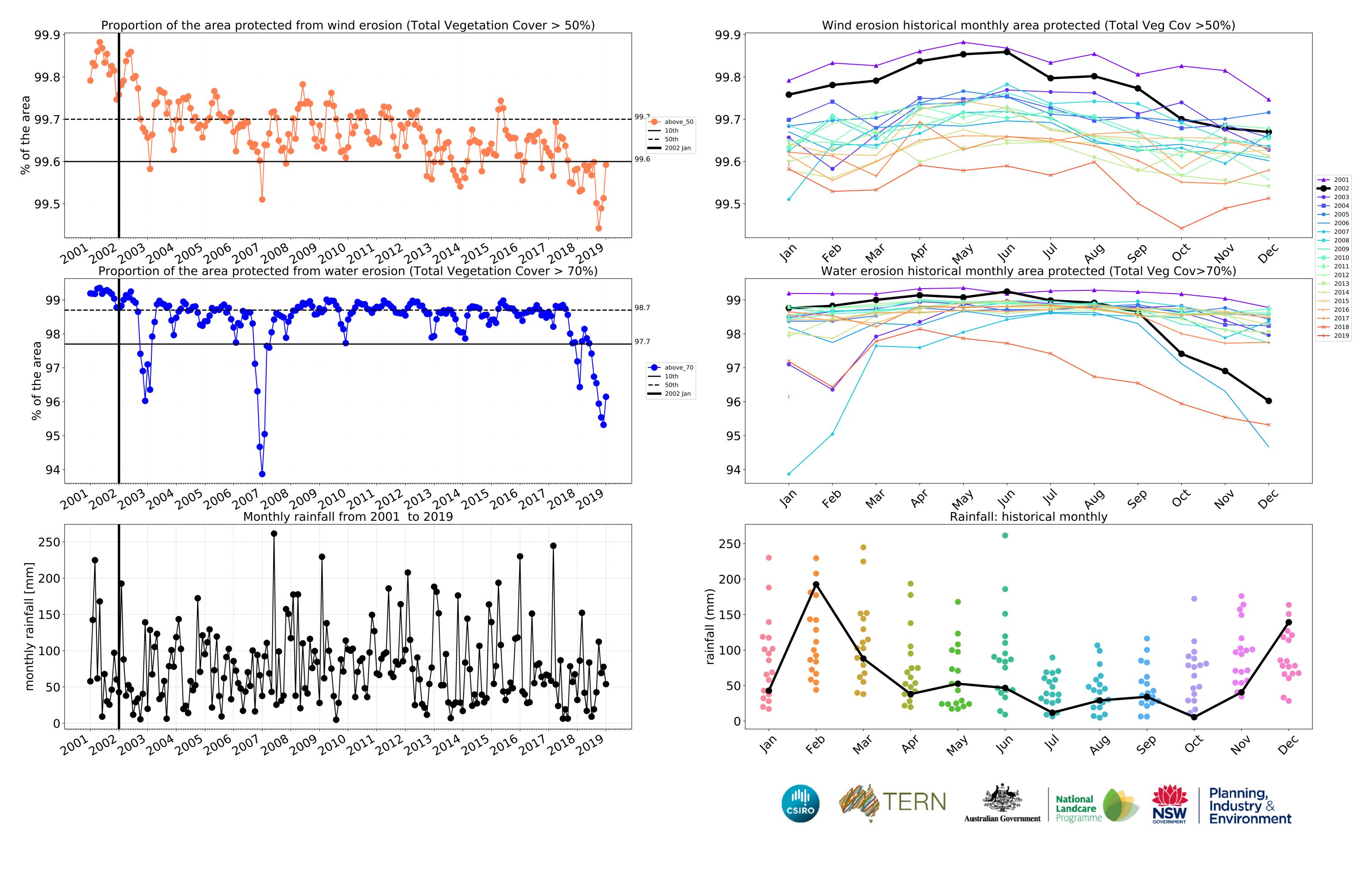


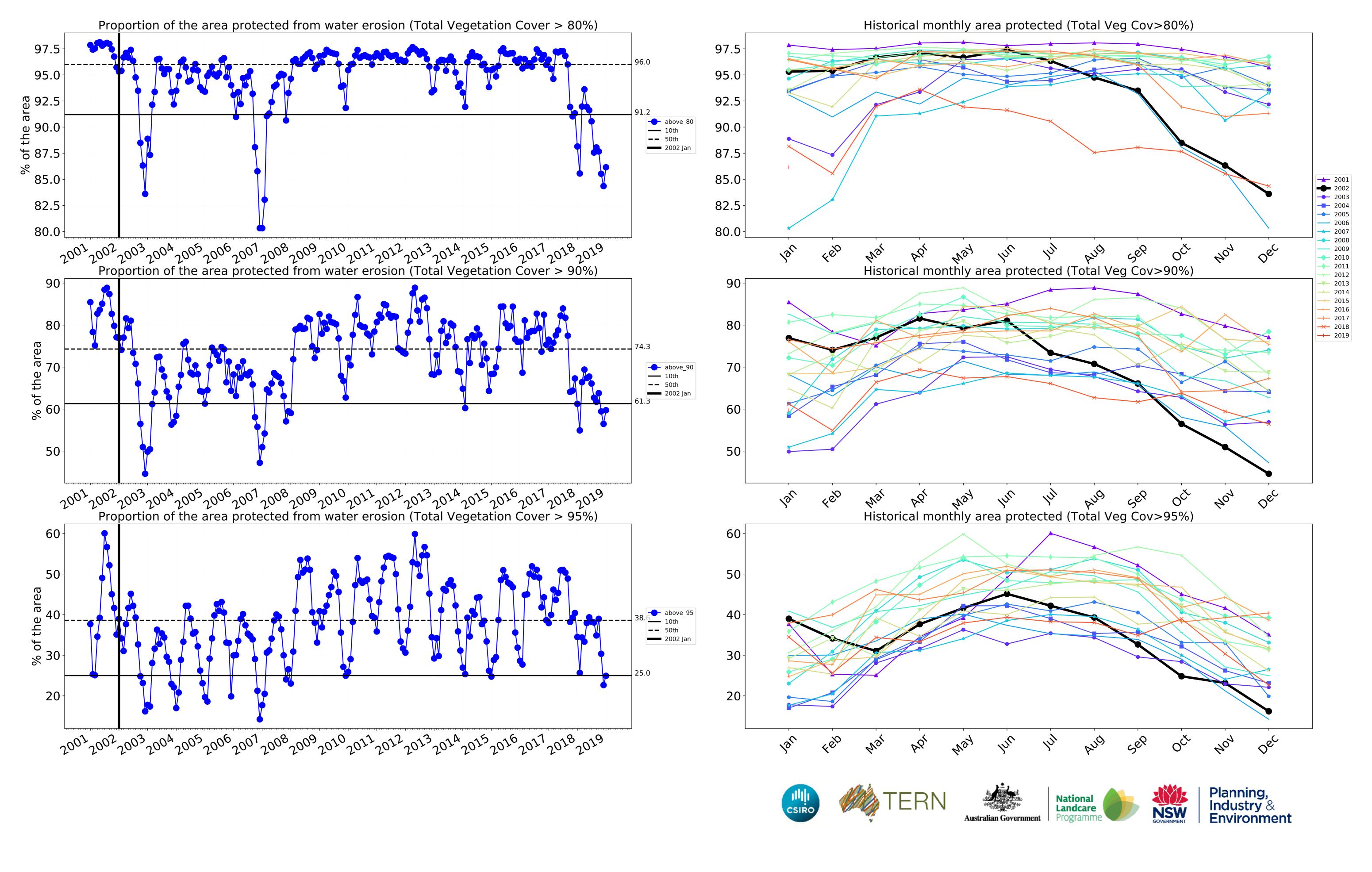






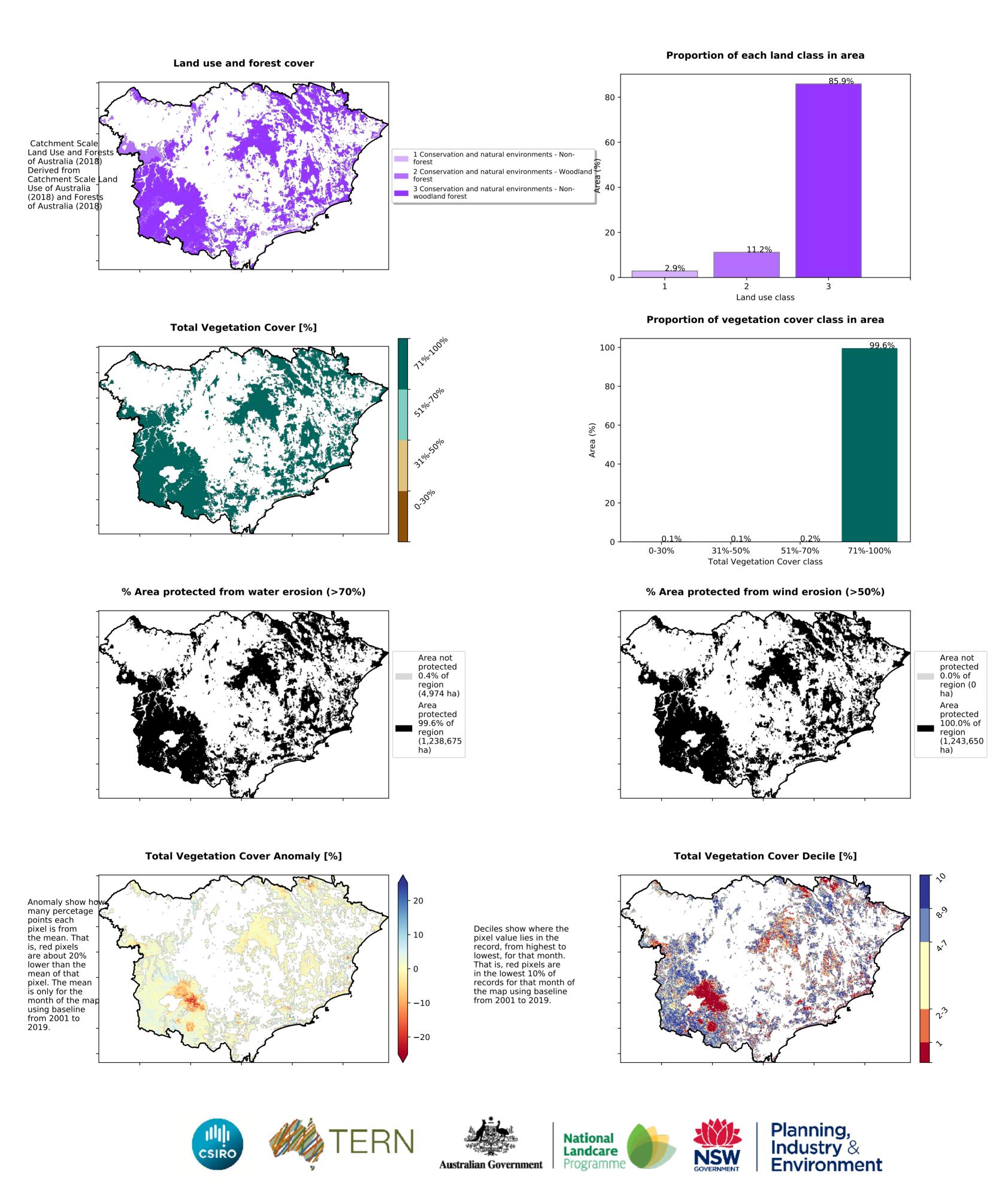




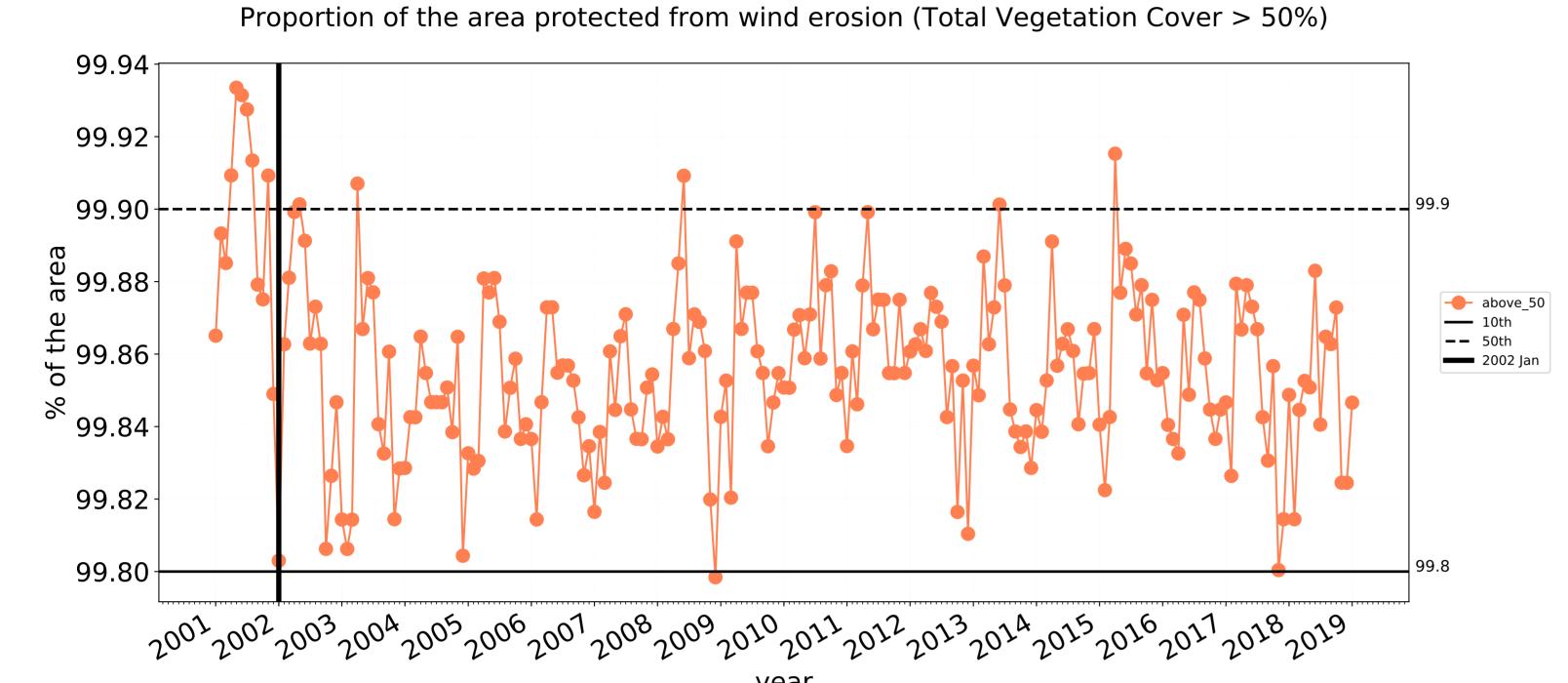


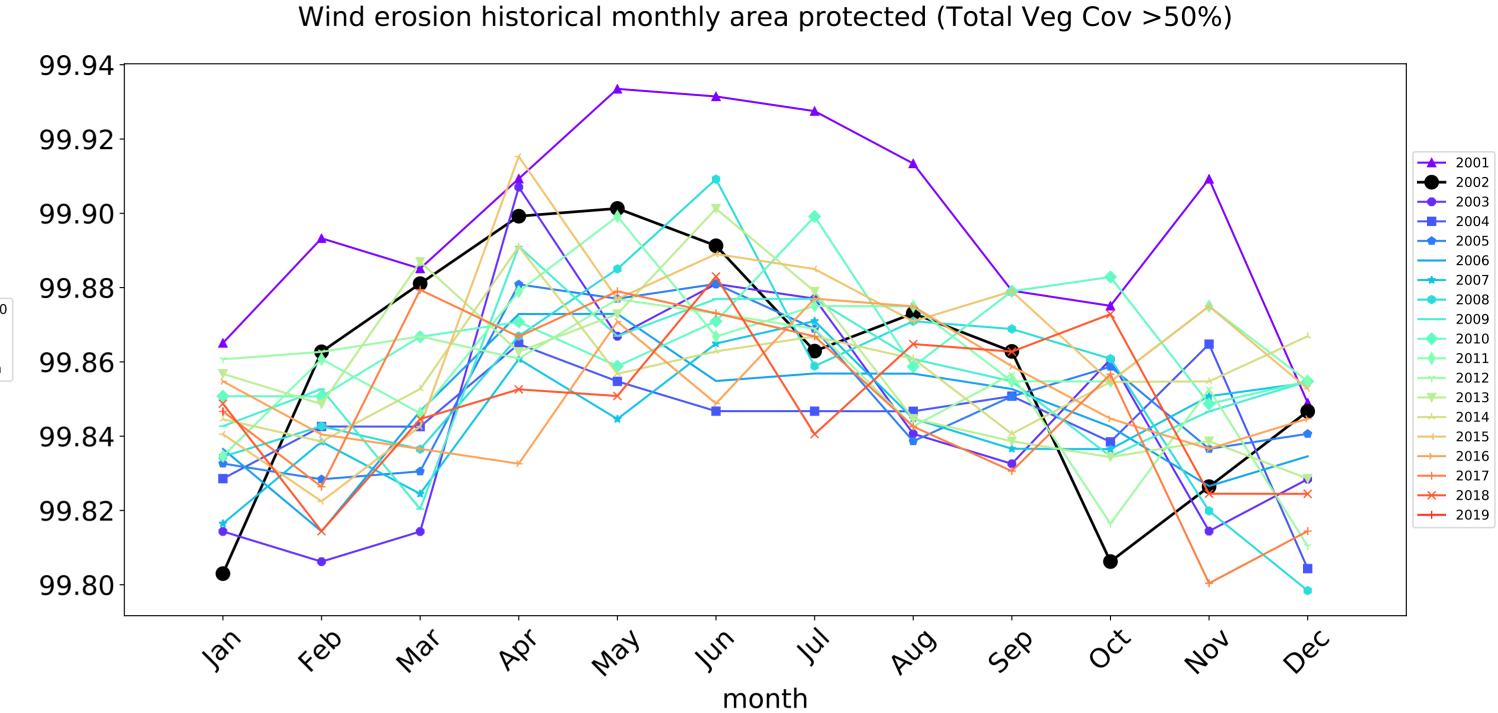
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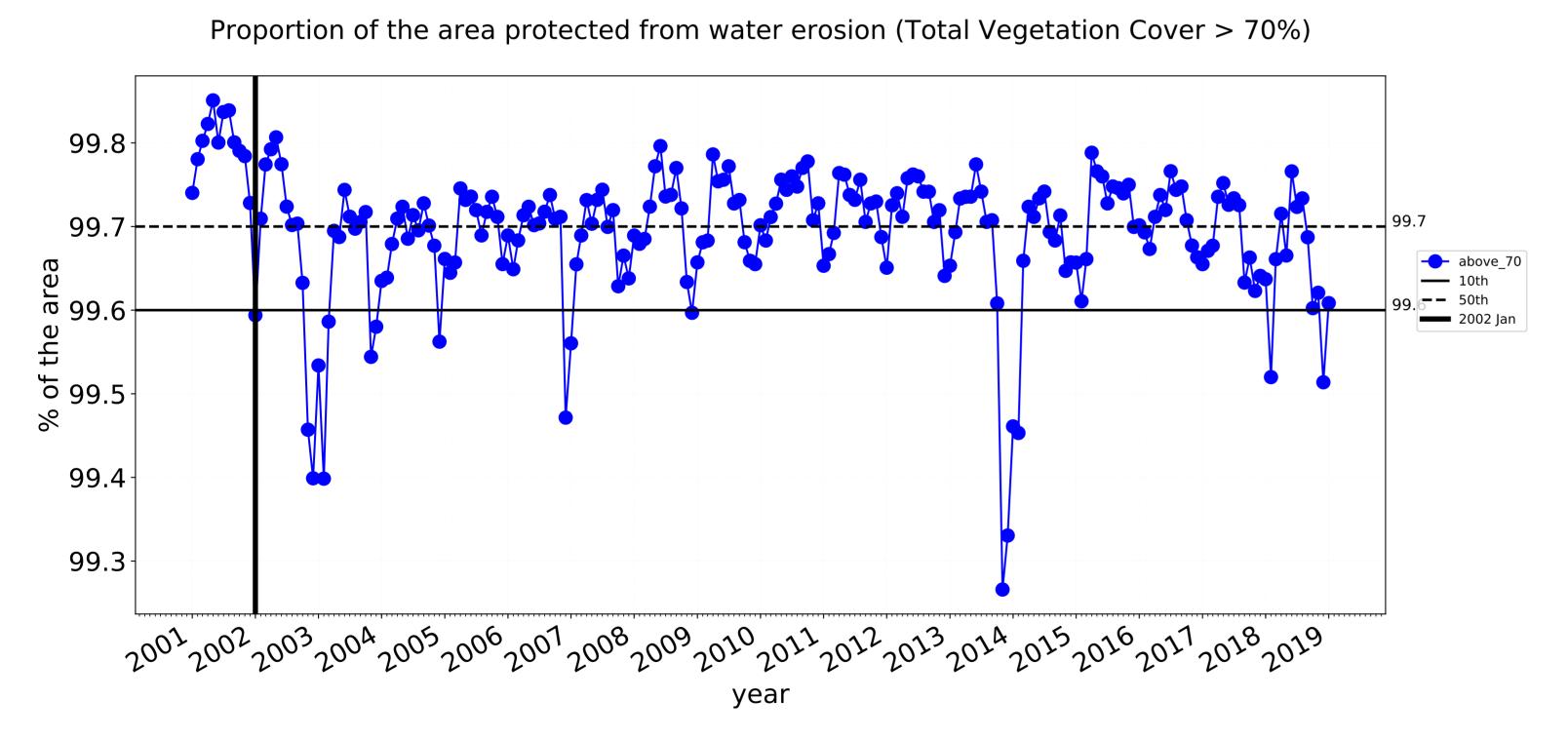
Conservation and natural environments

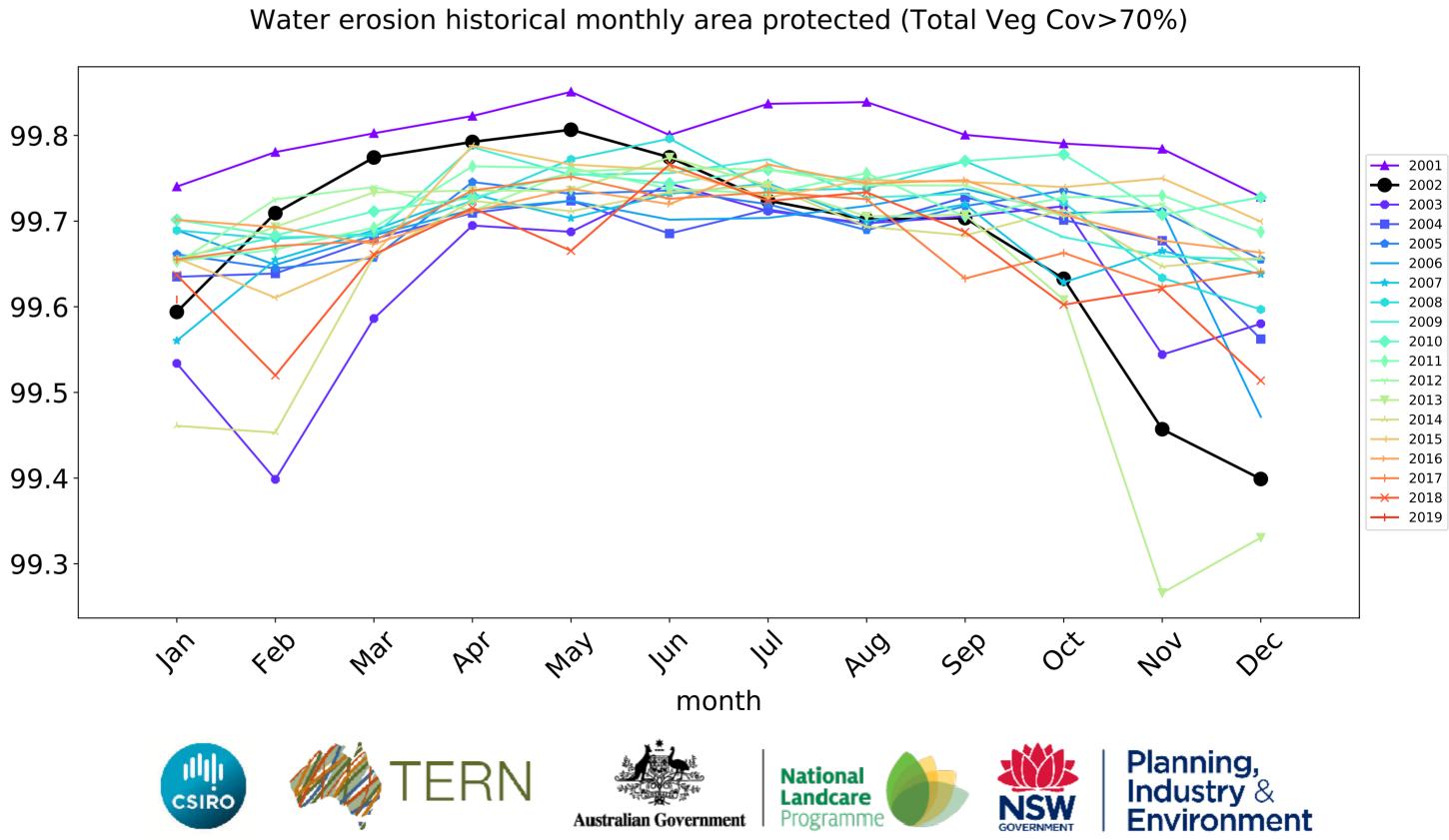


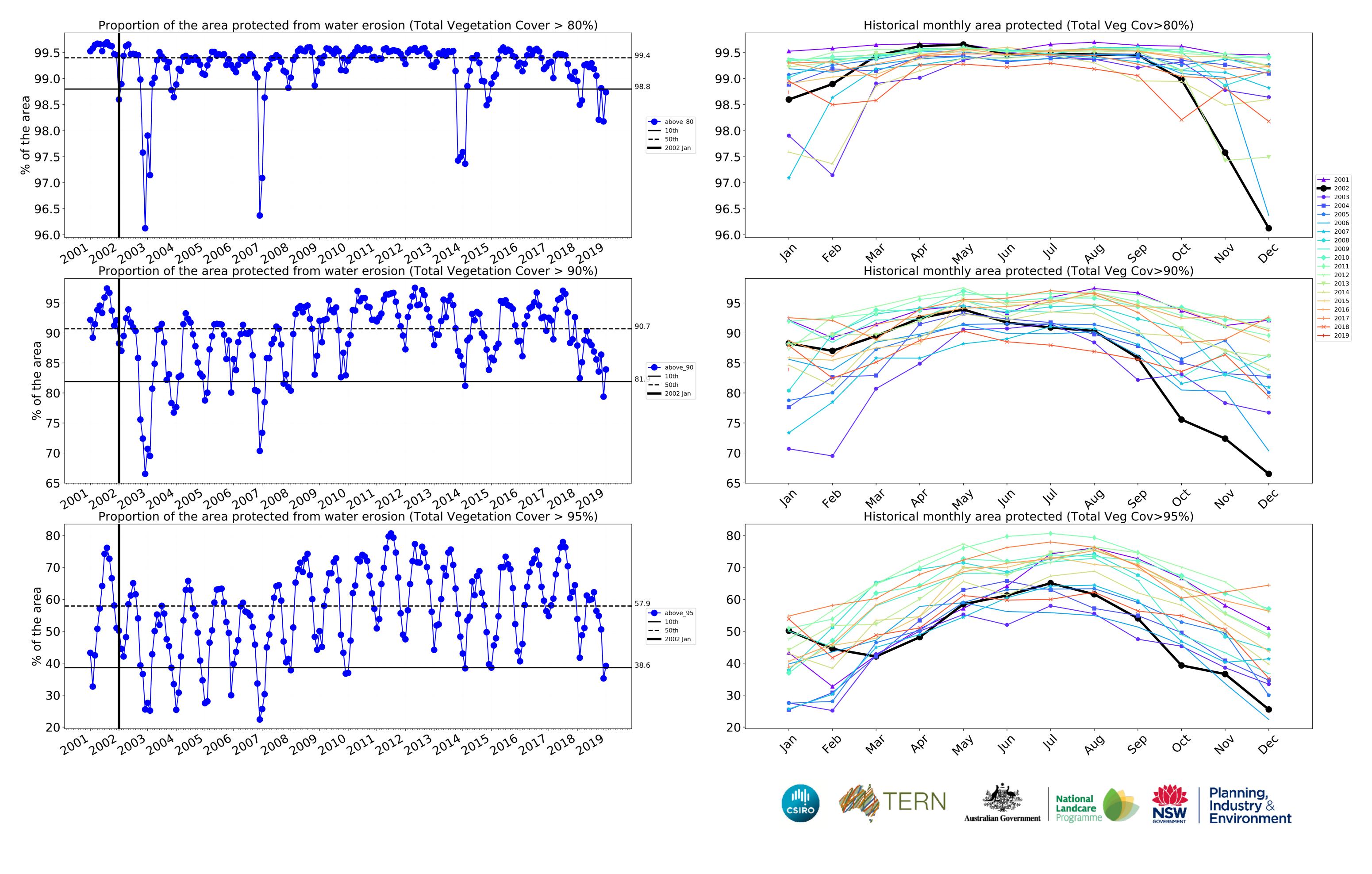
Conservation and natural environments timeseries







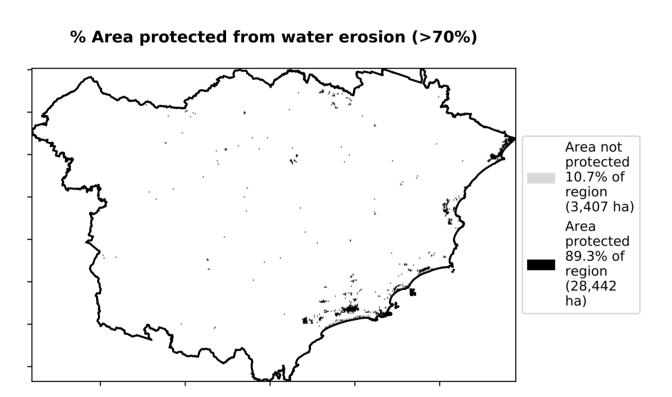


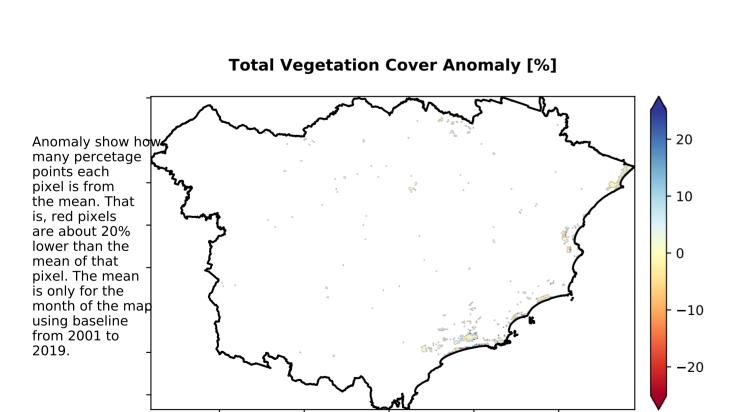


Conservation and natural environments non forest

Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Juse of Australia (2018) 1 Conservation and natural environments - Nonforest of Australia (2018)

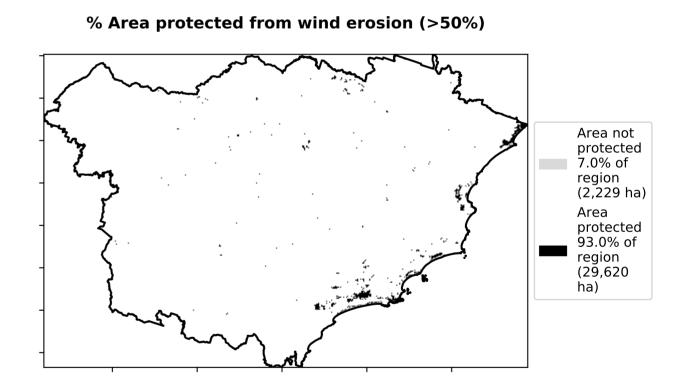
Total Vegetation Cover [%] Tipological and the state of the state of

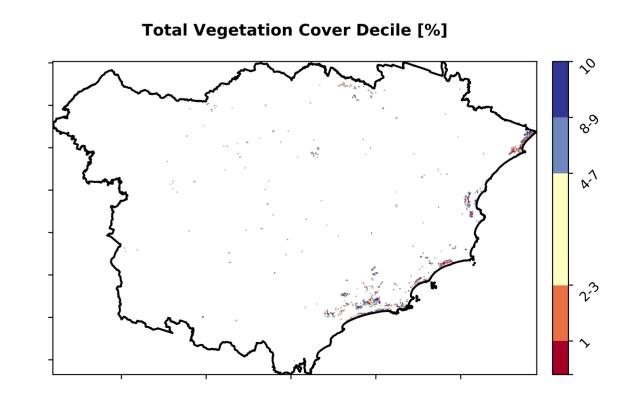




Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

80 - 89.3% 89.3% 89.3% 89.3% 40 - 20 - 4.5% 2.4% 3.8% 71%-100% Total Vegetation Cover class









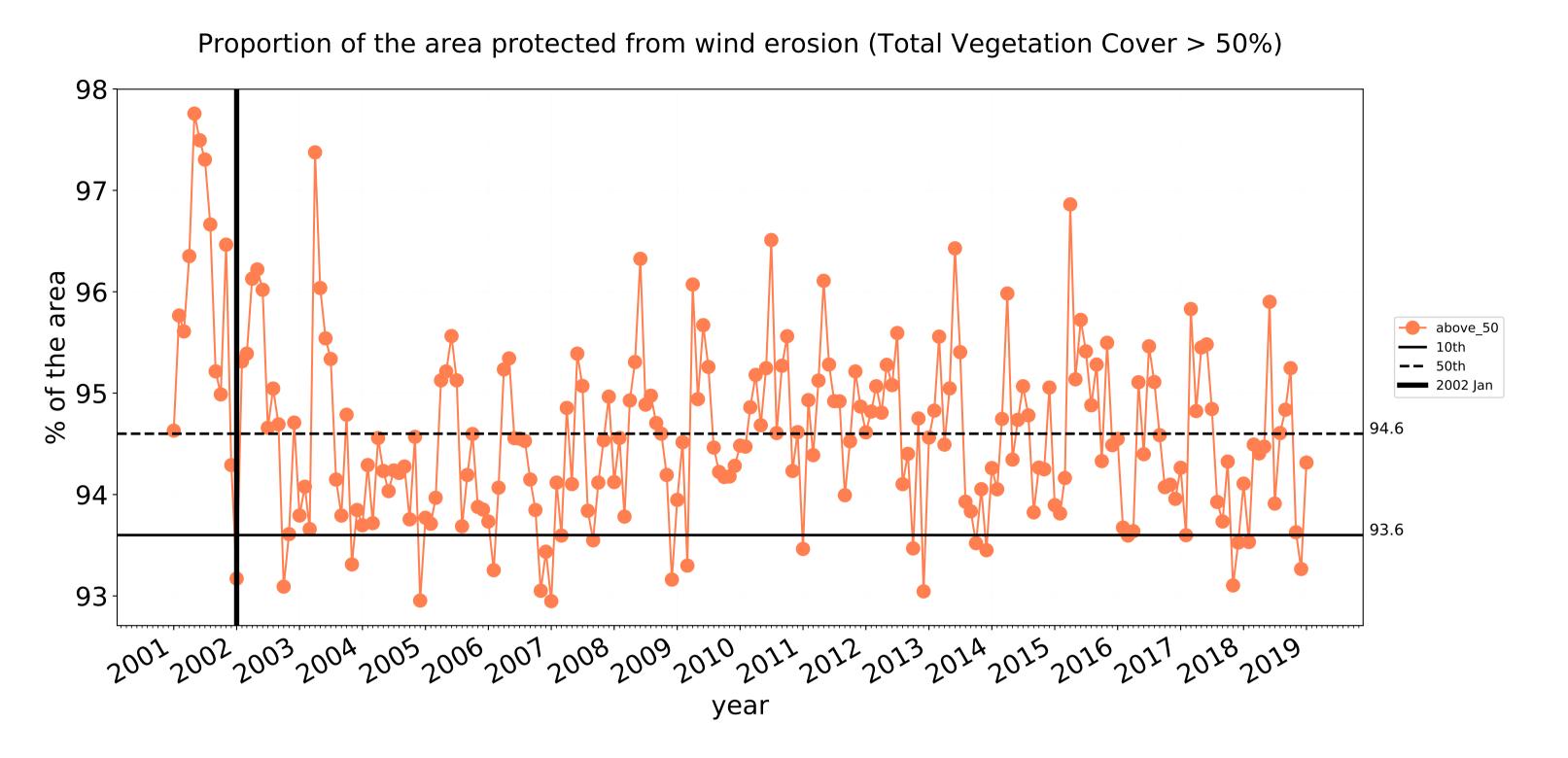


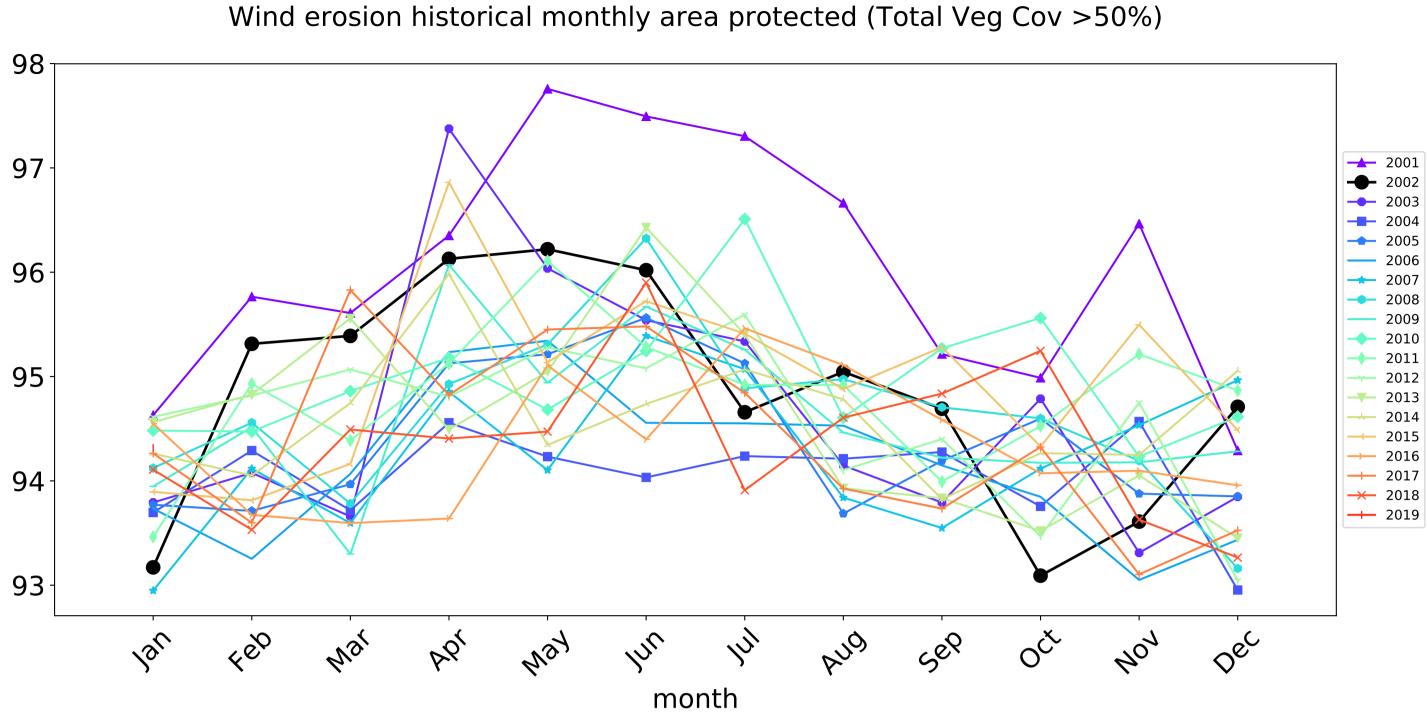


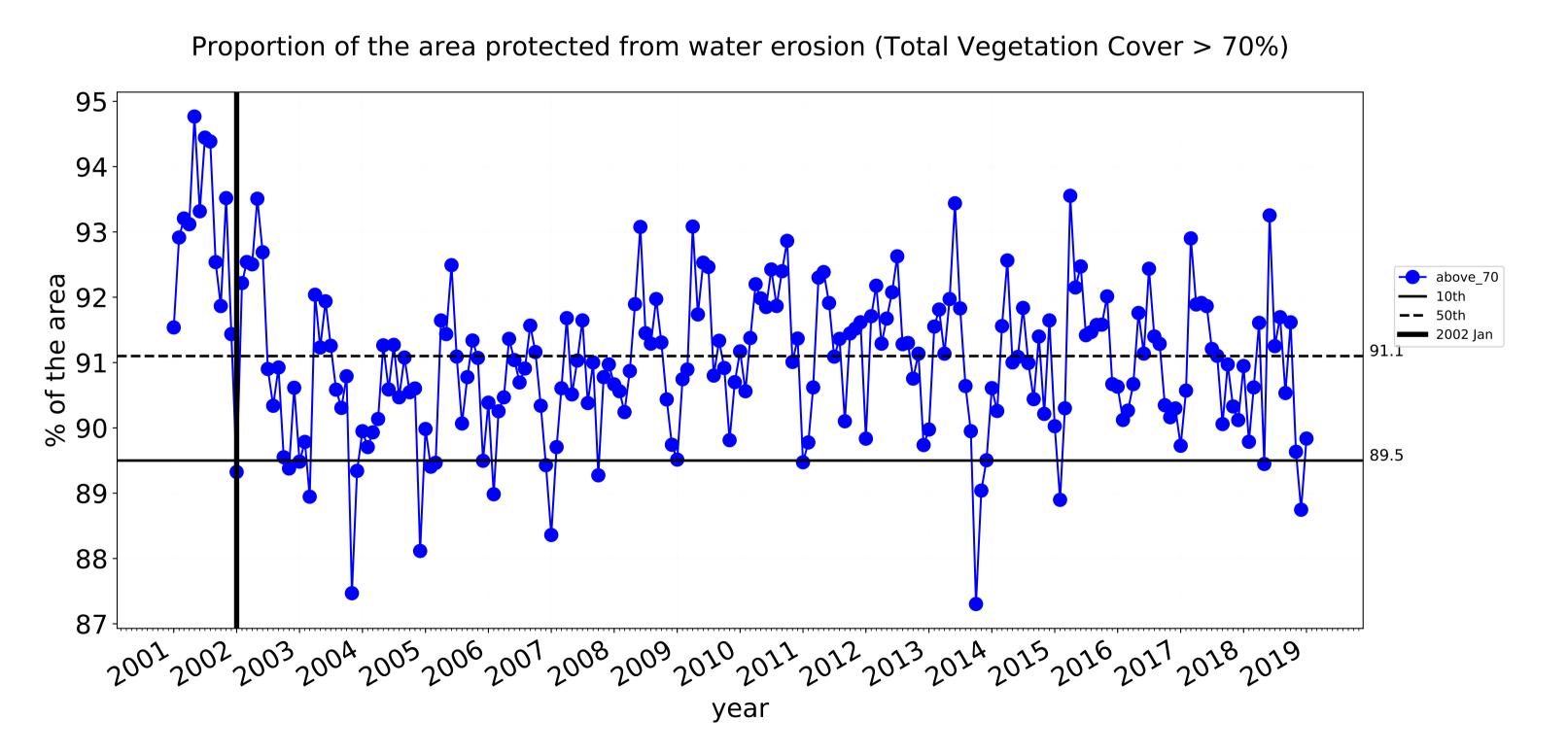


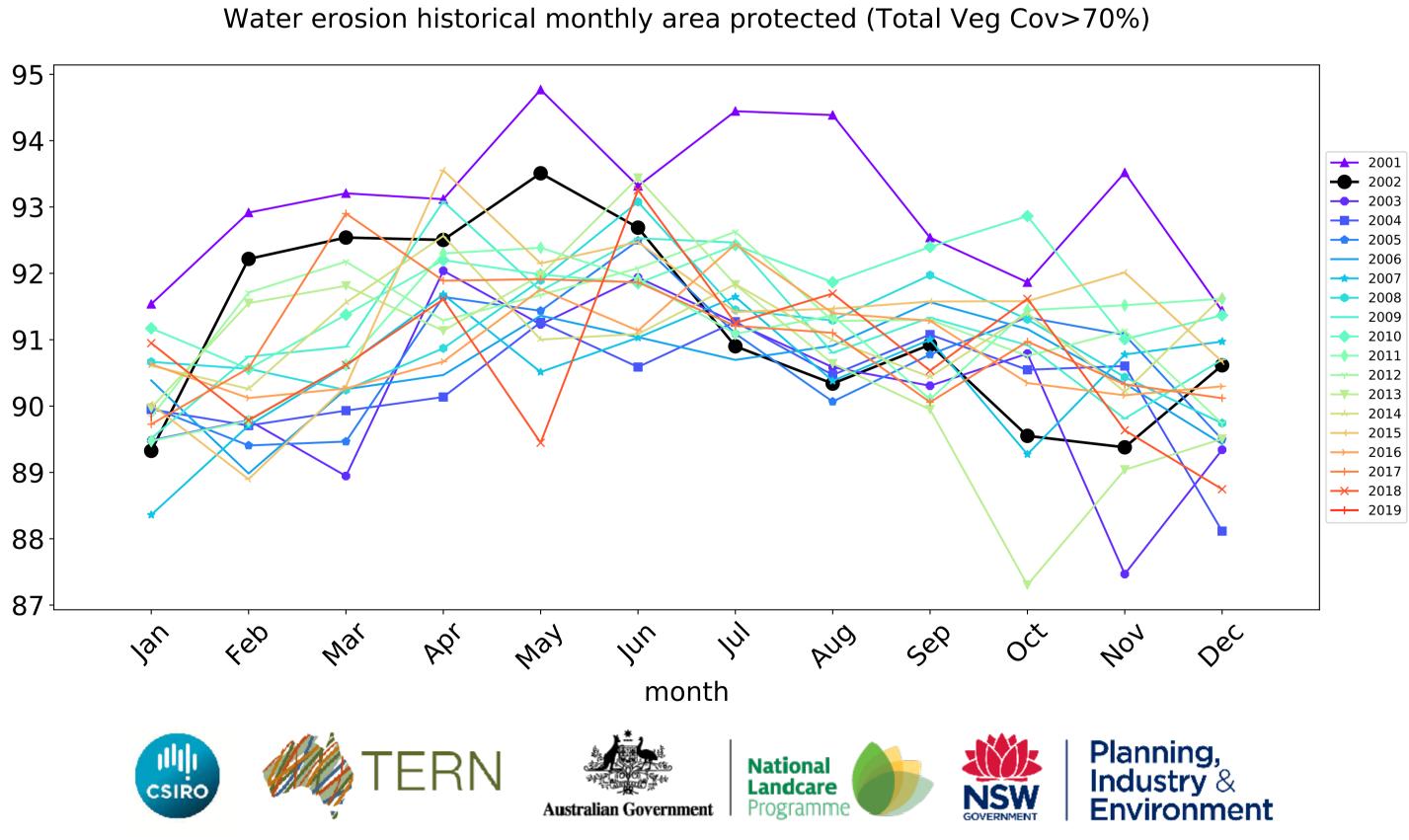


Conservation and natural environments non forest timeseries

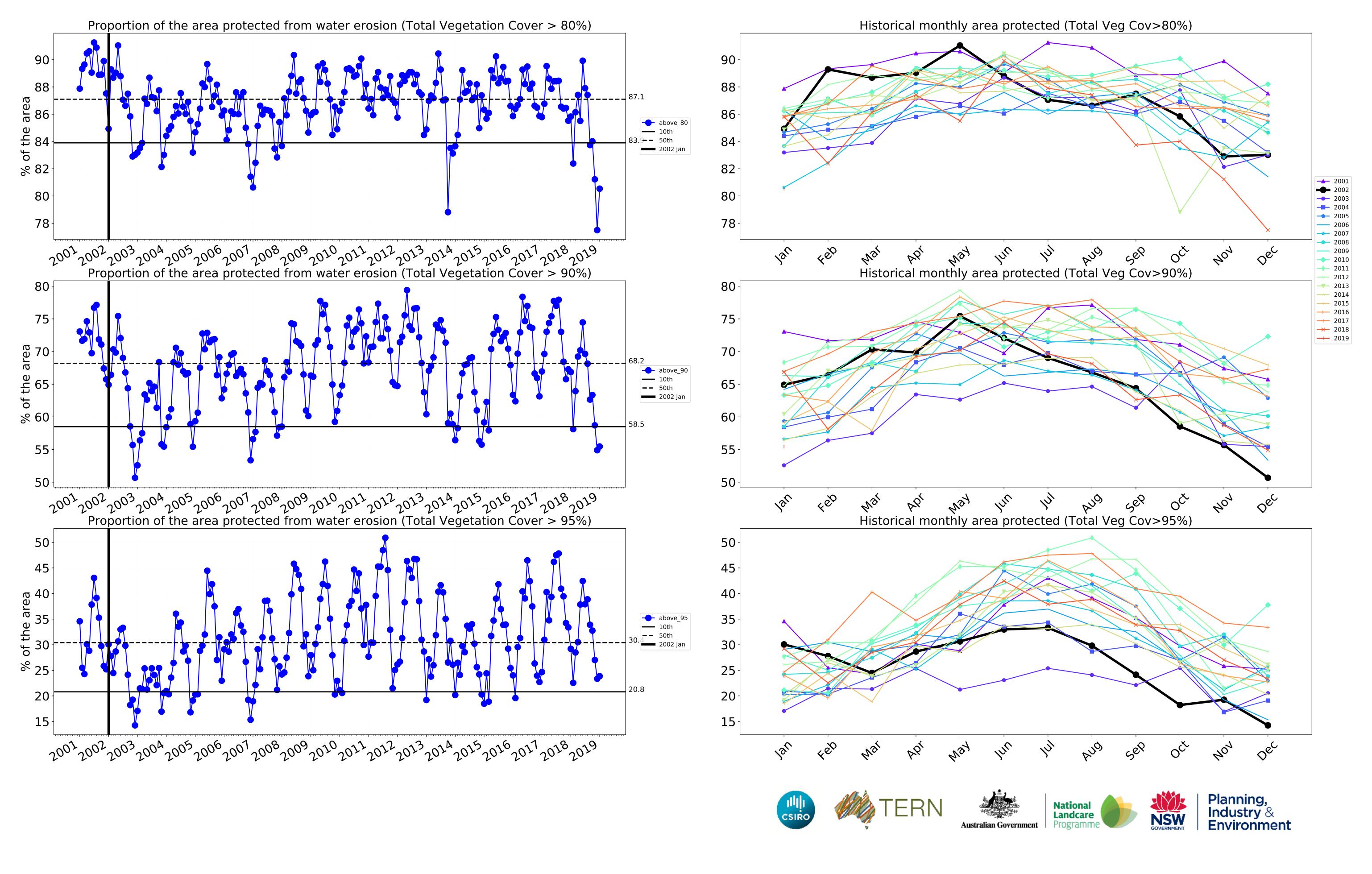




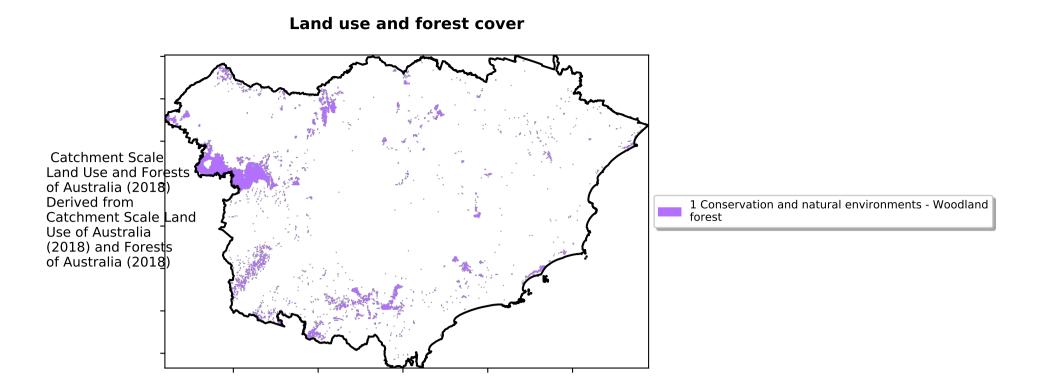




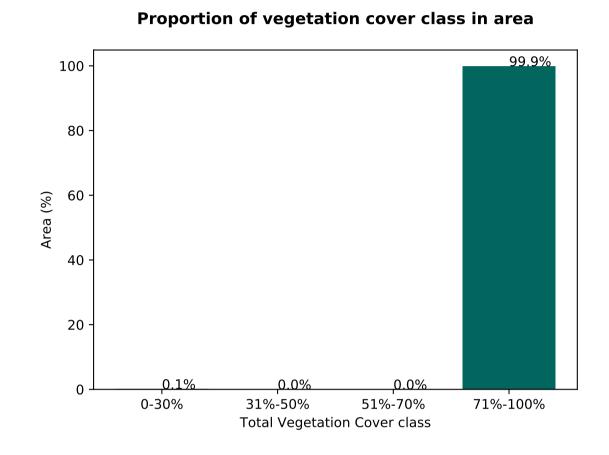
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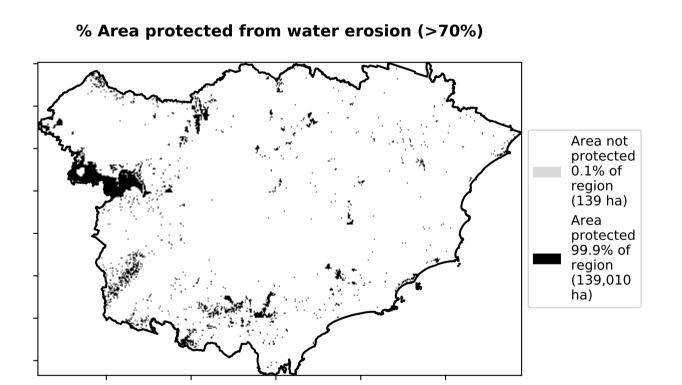


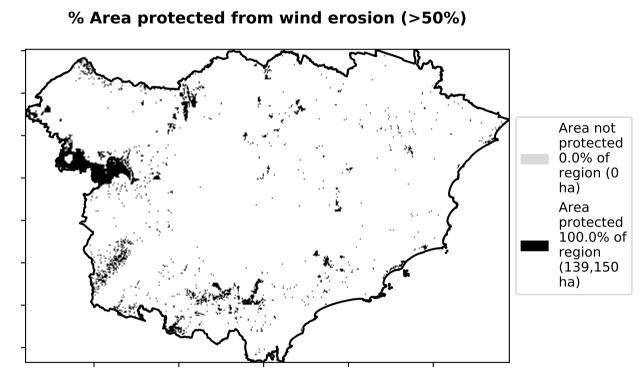
Conservation and natural environments Woodland forest

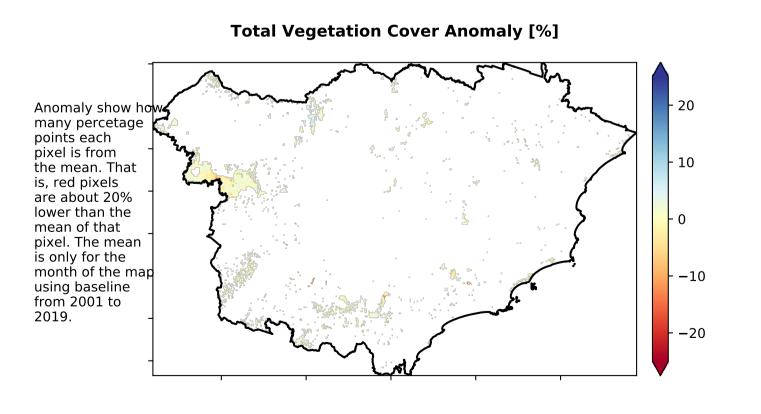


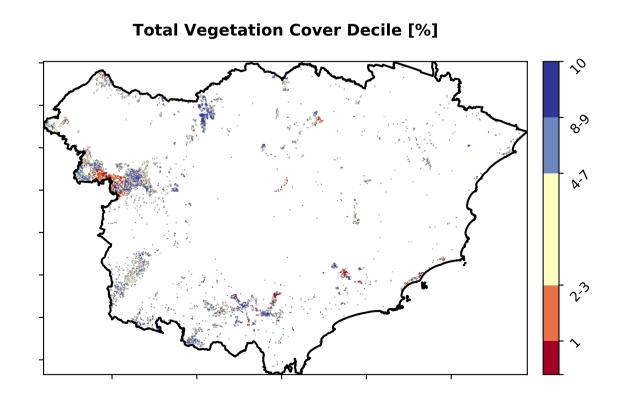
Total Vegetation Cover [%] Total Vegetation Cover [%] Total Vegetation Cover [%]















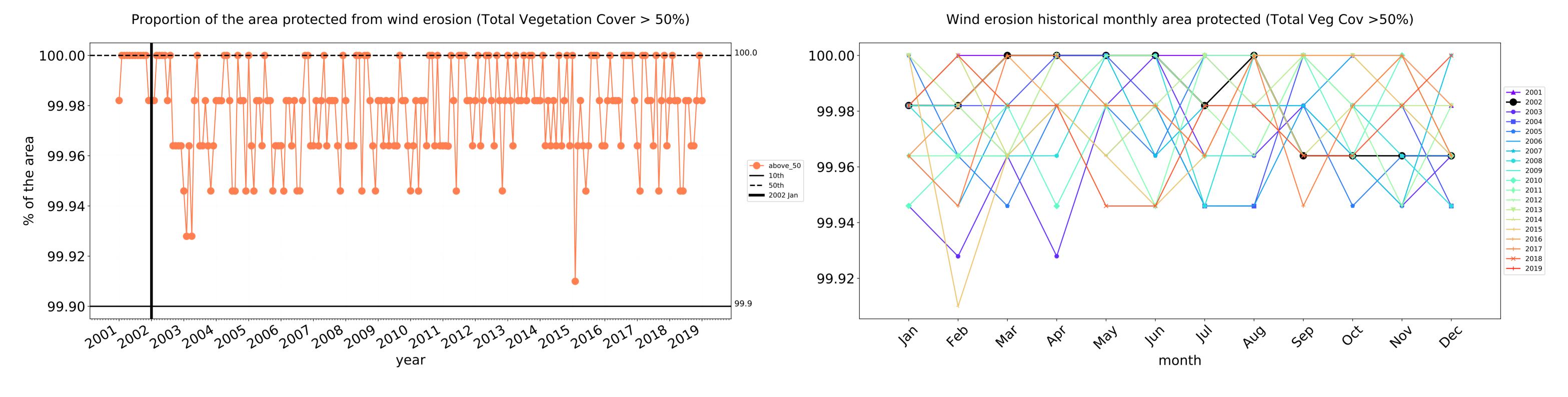


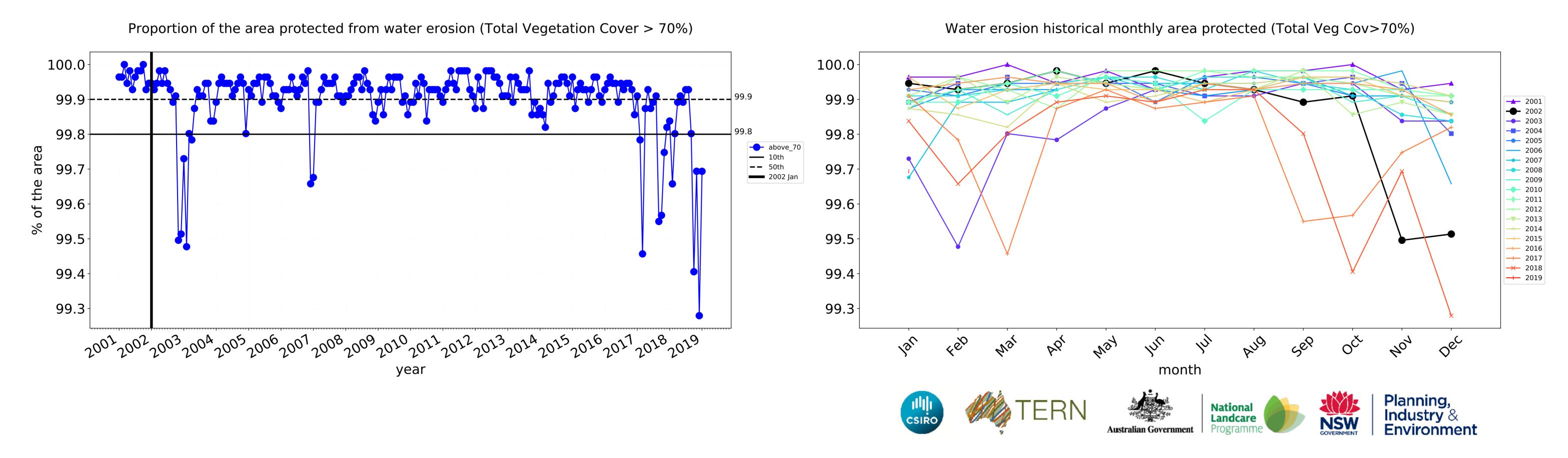


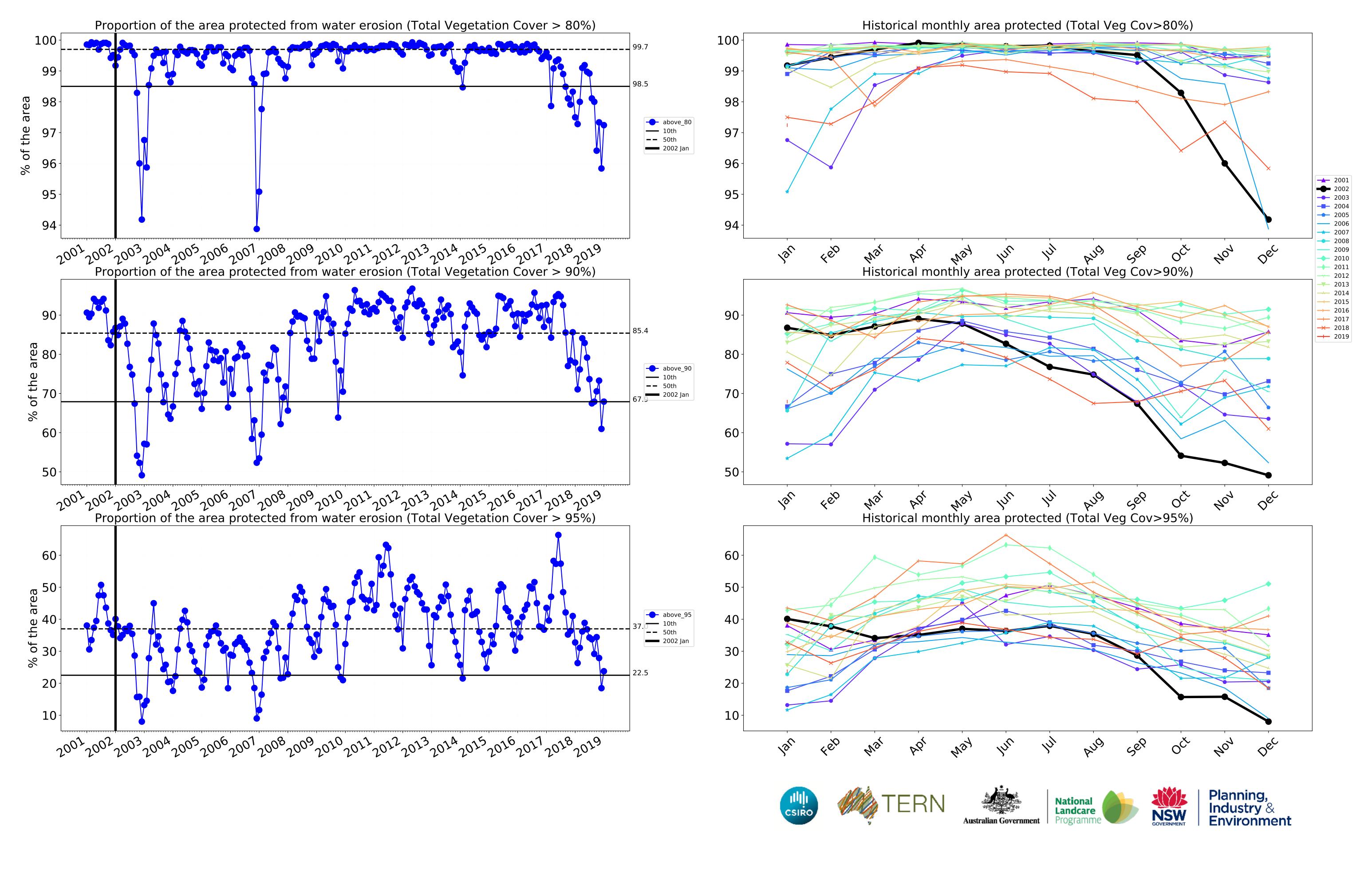




Conservation and natural environments Woodland forest timeseries



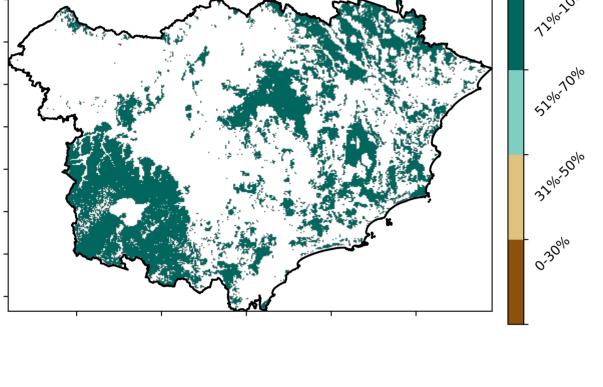


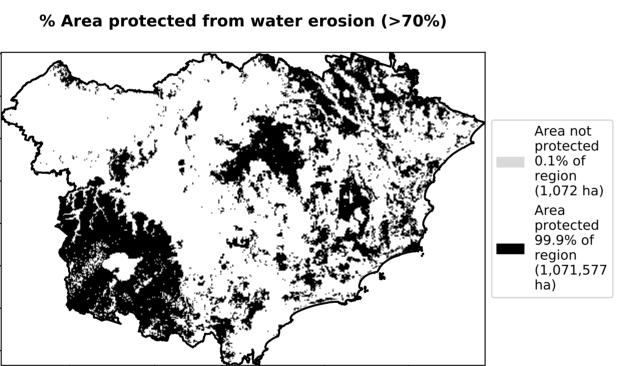


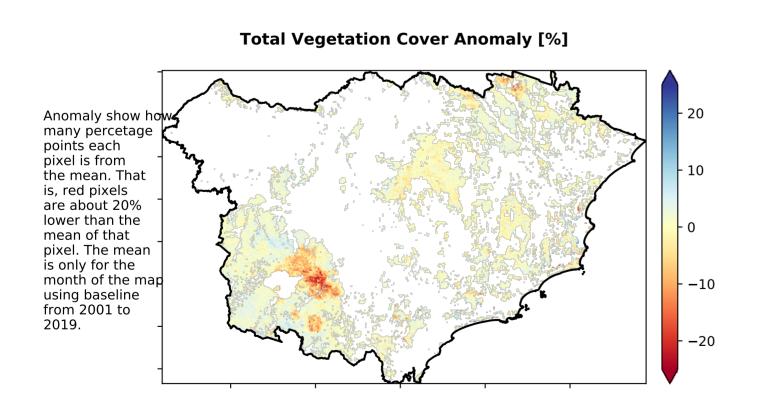
Conservation and natural environments Forest (non woodland)

Land use and forest cover Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Use of Australia (2018) and Forests of Australia (2018) 1 Conservation and natural environments - Nonwoodland forest

Total Vegetation Cover [%]

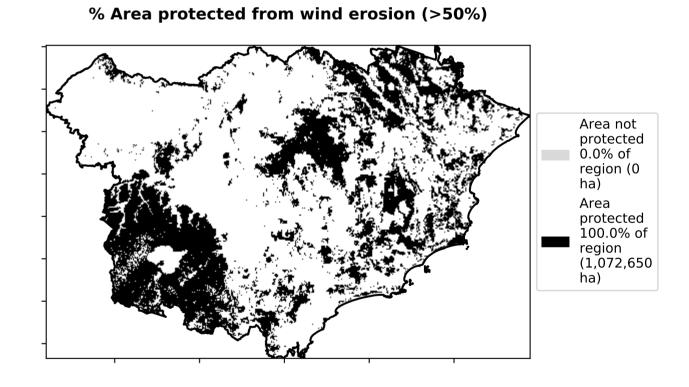


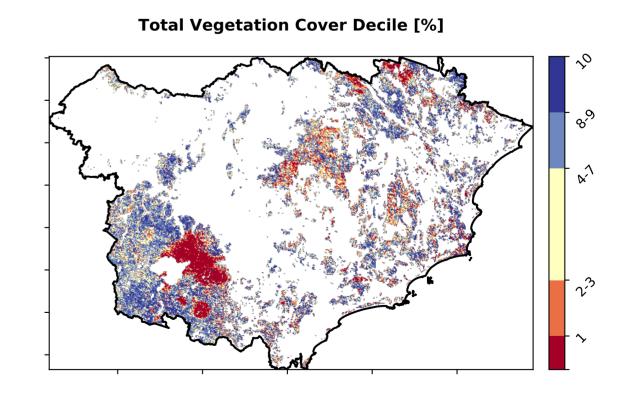




Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the man using baseline. the map using baseline from 2001 to 2019.

Proportion of vegetation cover class in area 99.9% 100 80 60 40 20 0.1% 0-30% 31%-50% 51%-70% 71%-100% **Total Vegetation Cover class**







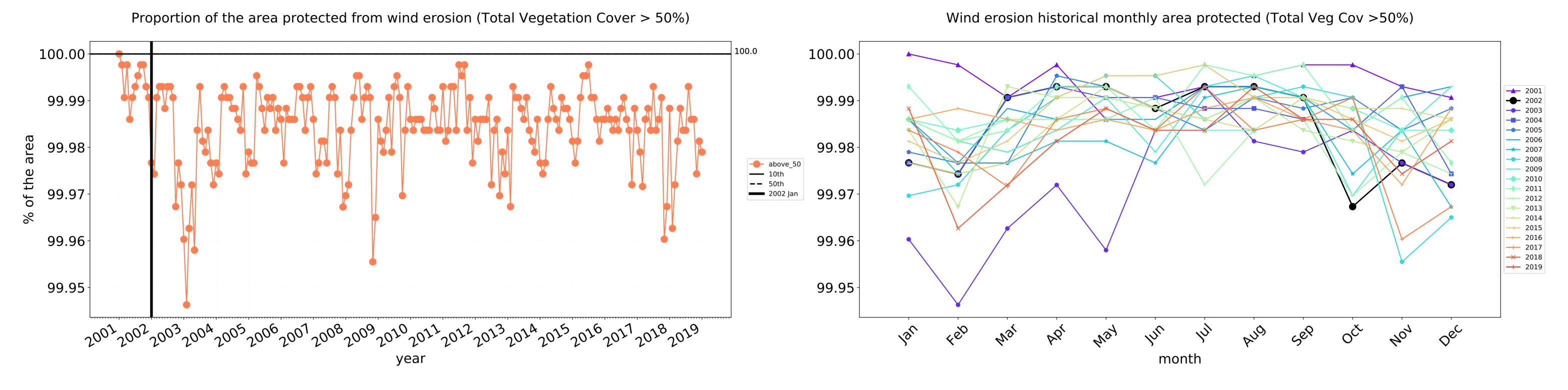


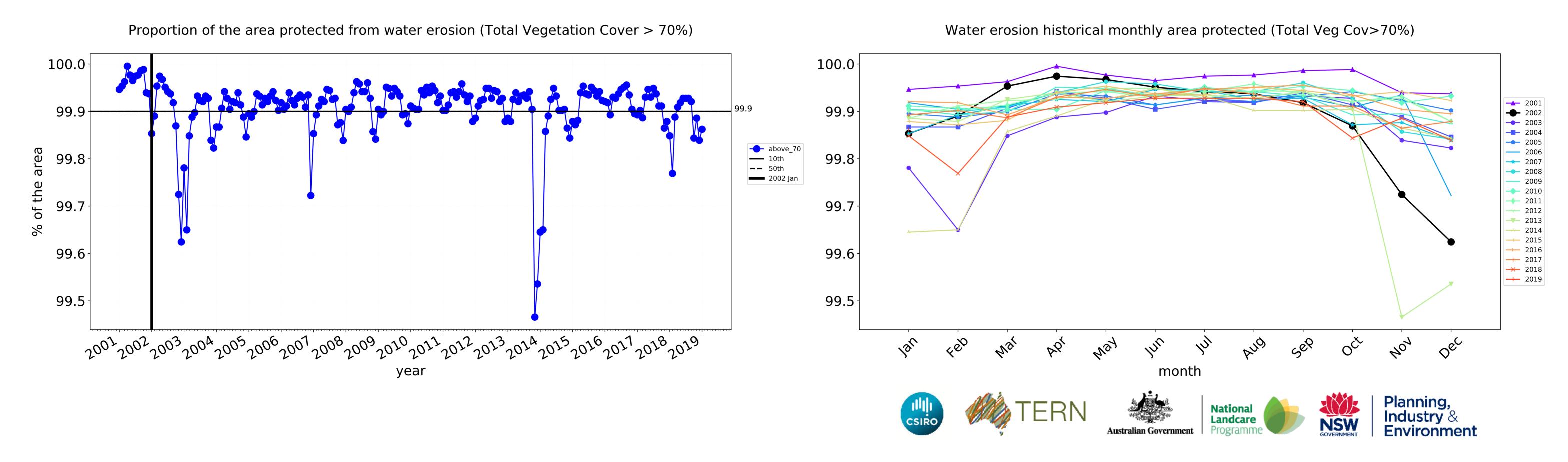


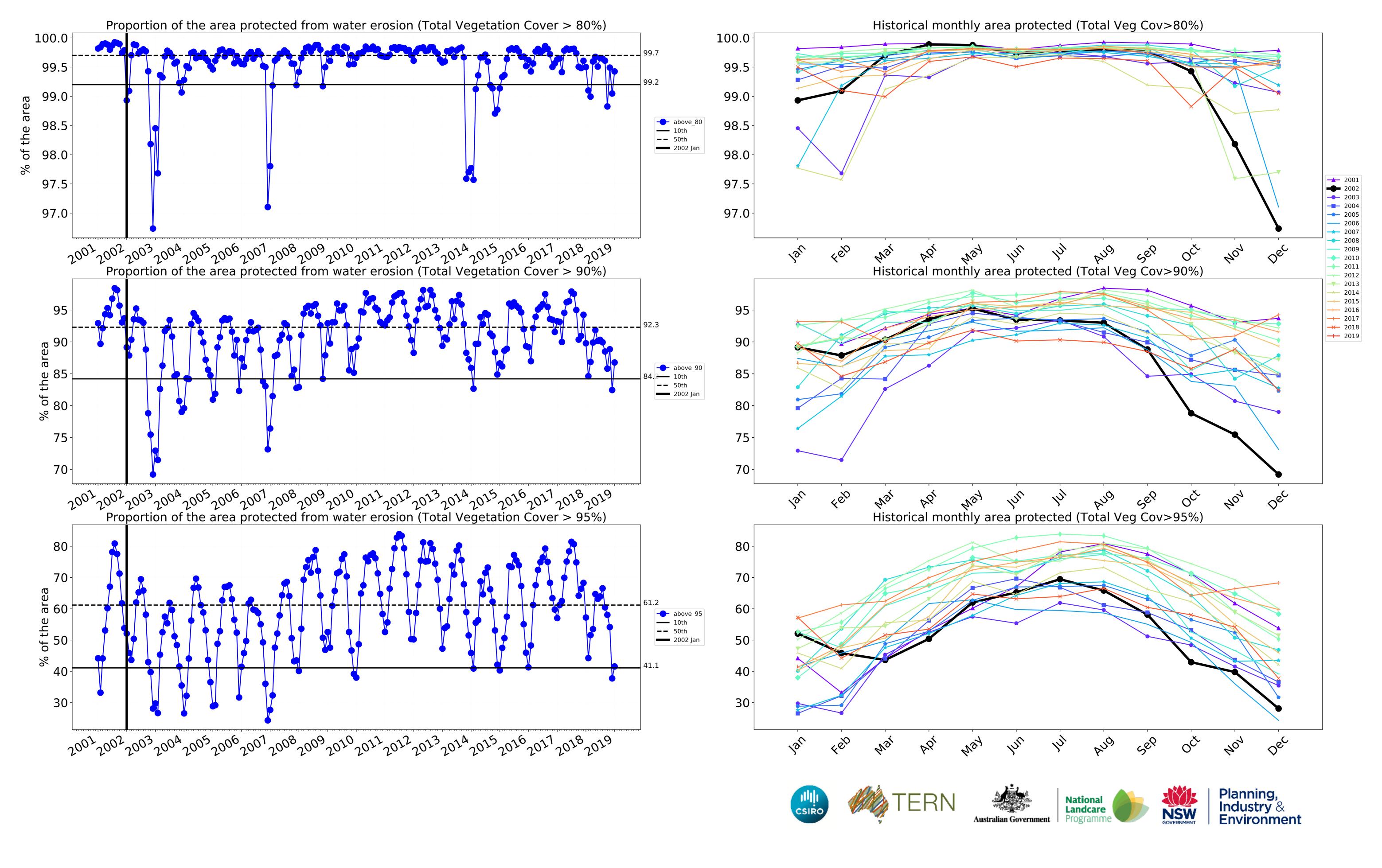




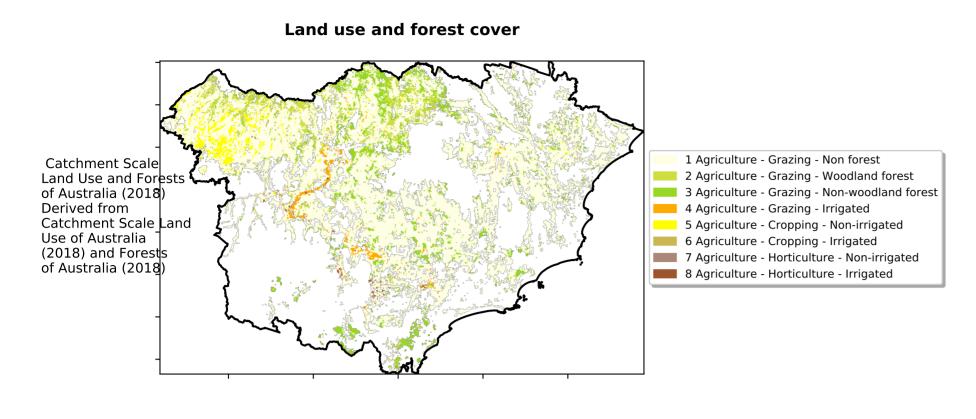


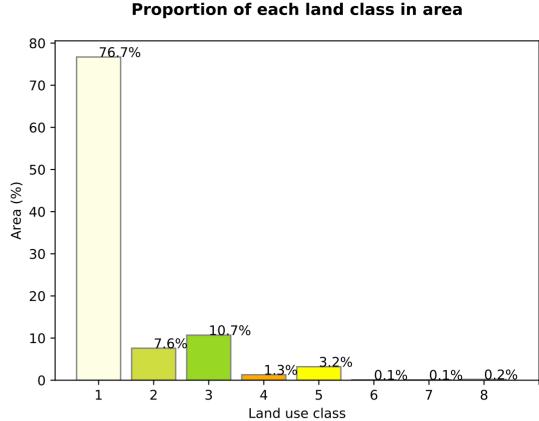


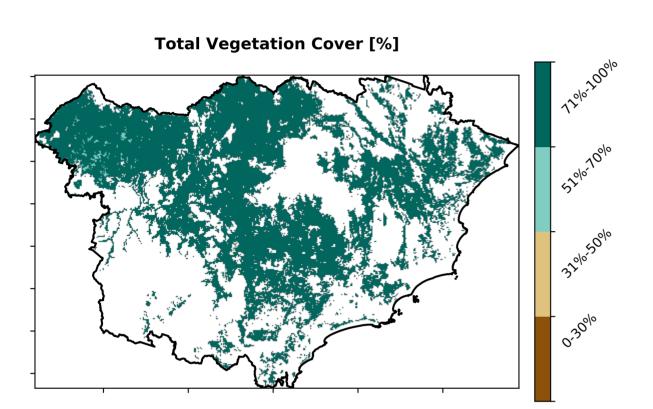


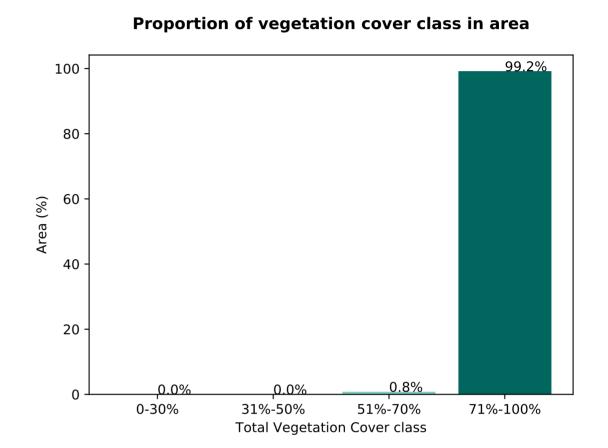


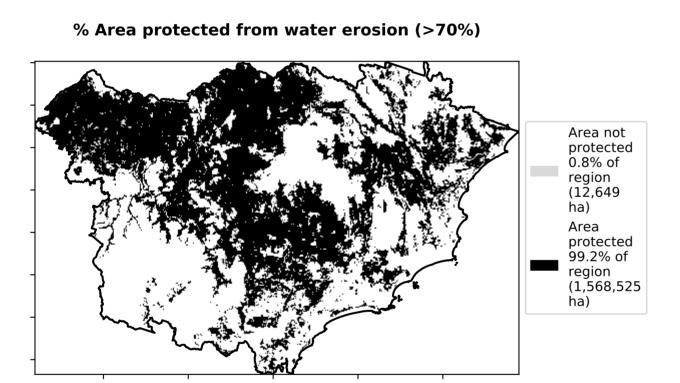
Agriculture

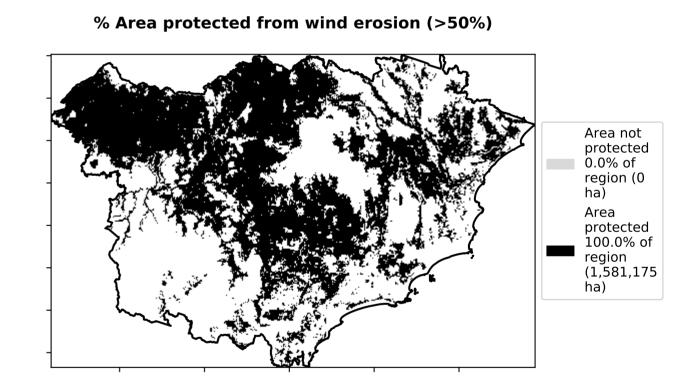


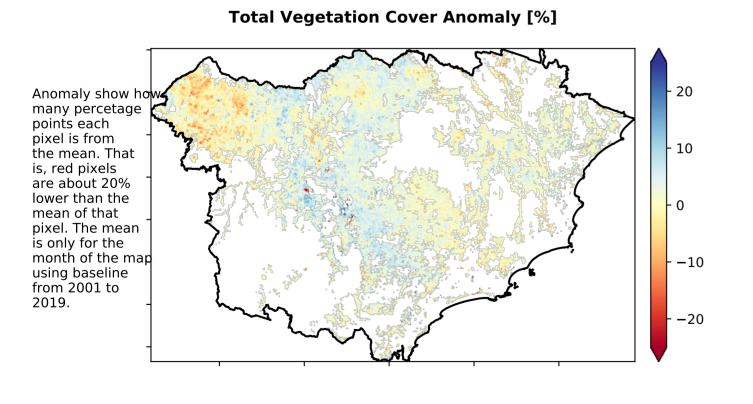


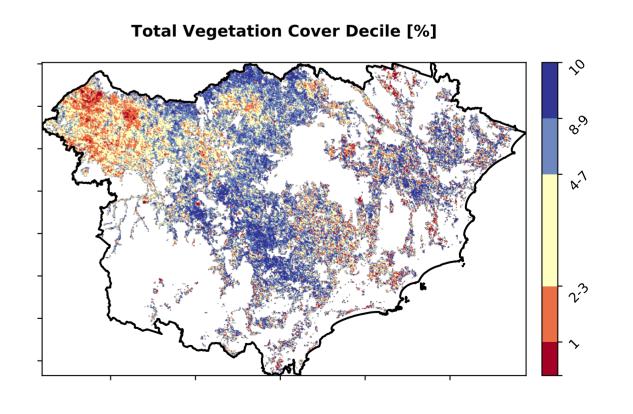


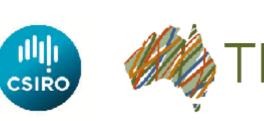












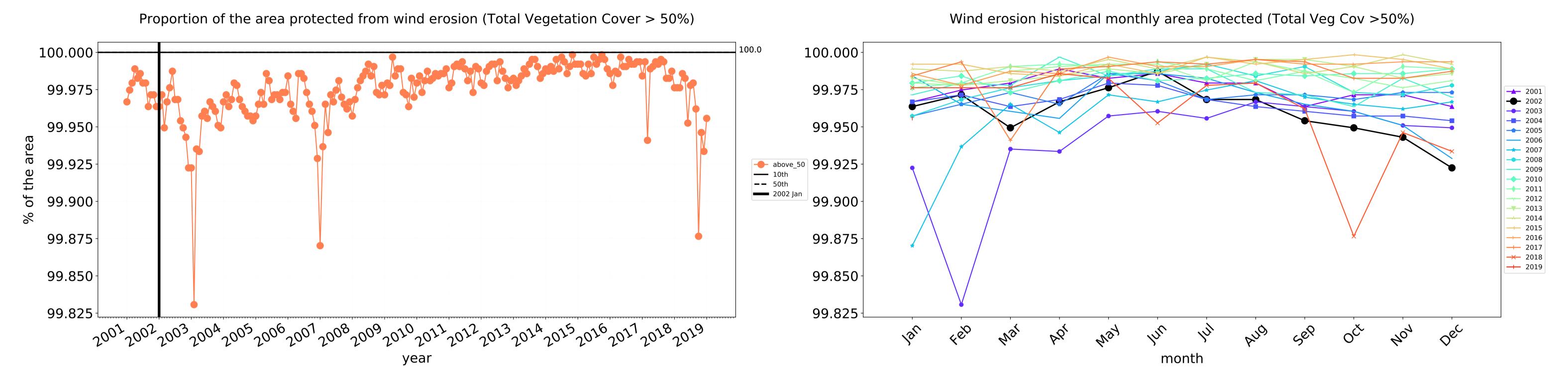


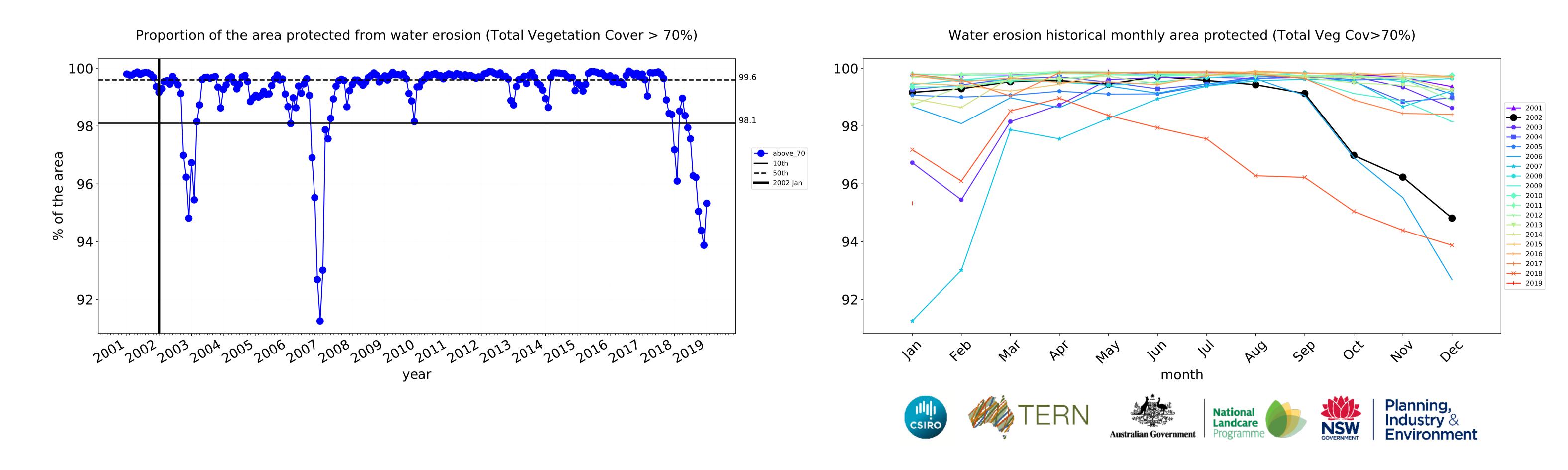


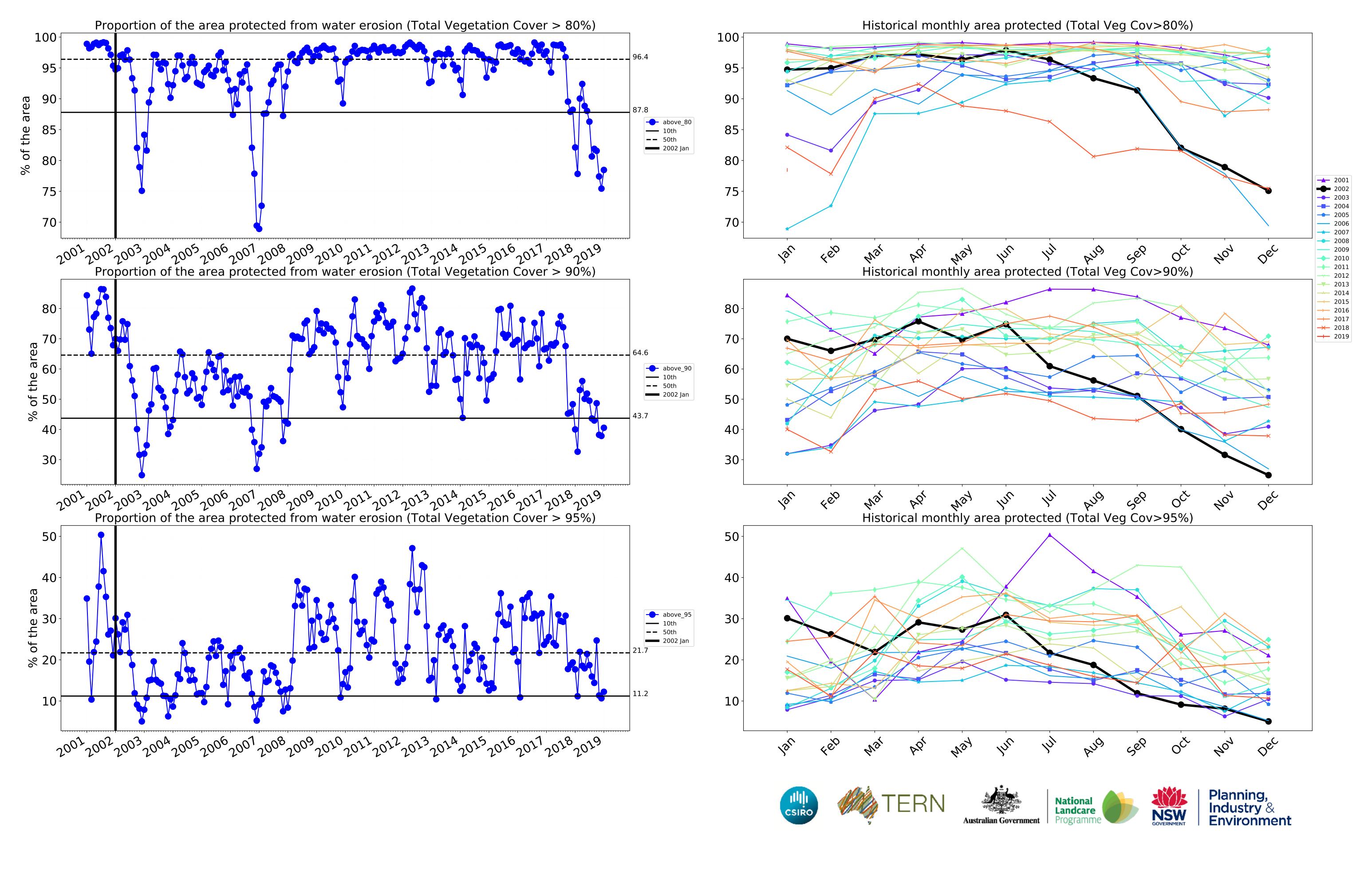




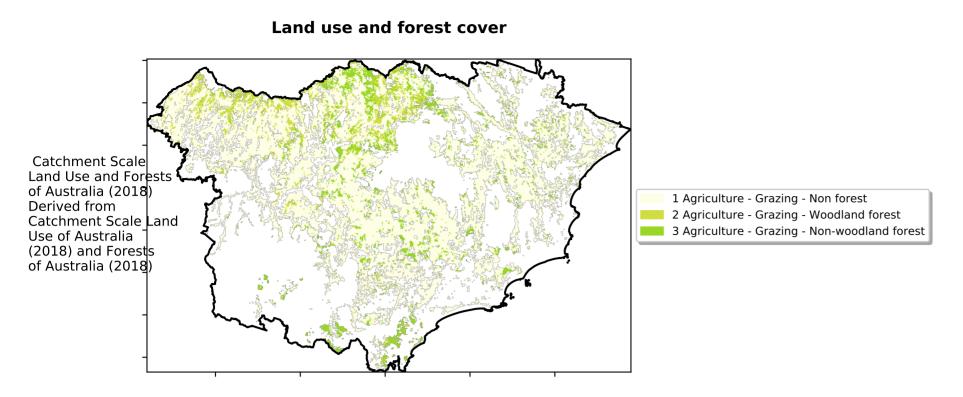
Agriculture timeseries



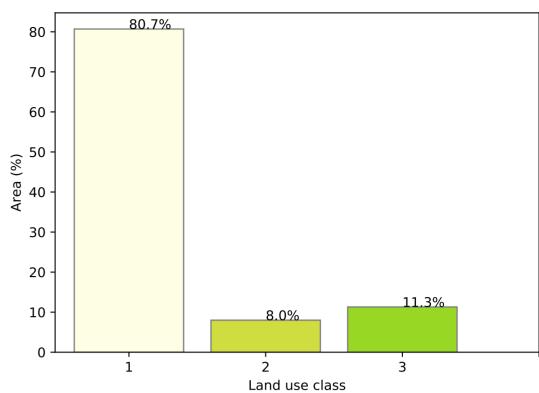




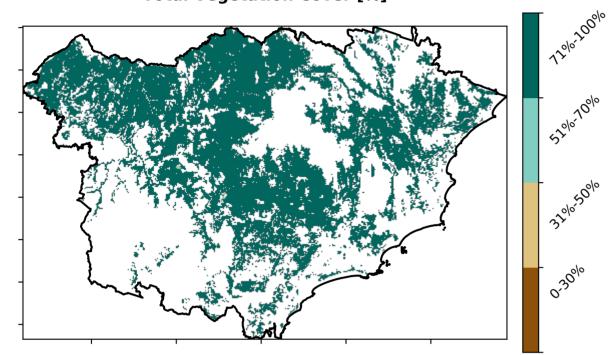
Grazing



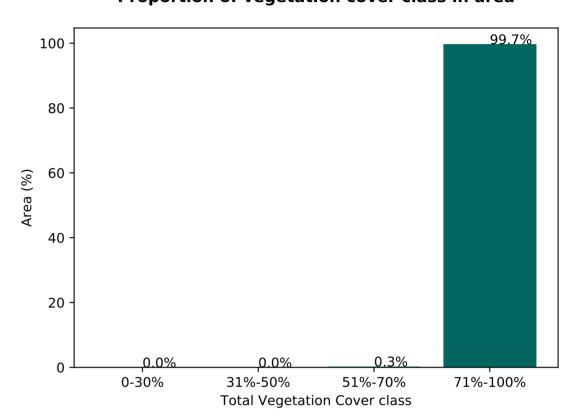
Proportion of each land class in area



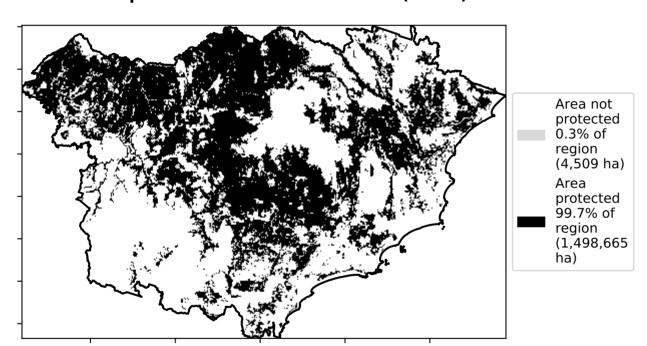




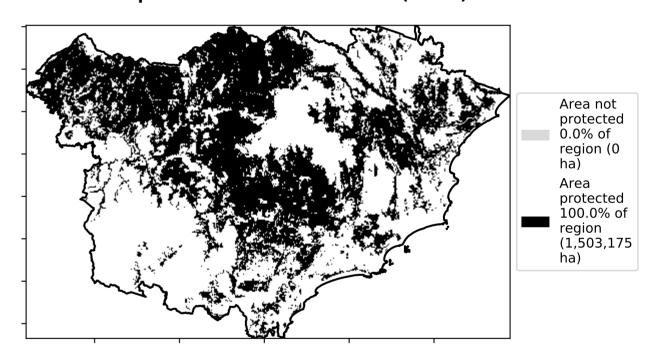
Proportion of vegetation cover class in area



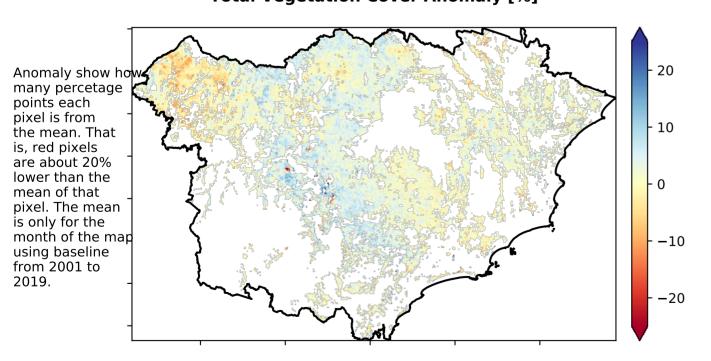
% Area protected from water erosion (>70%)

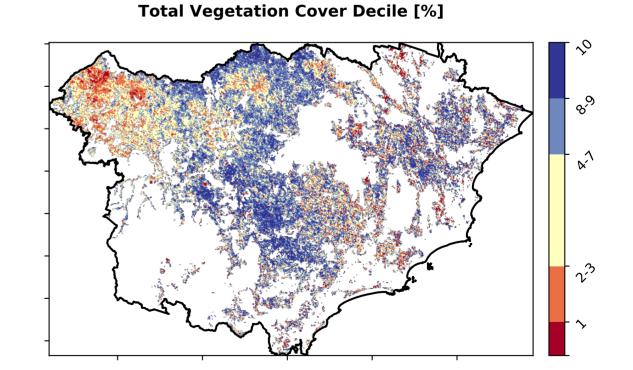


% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]









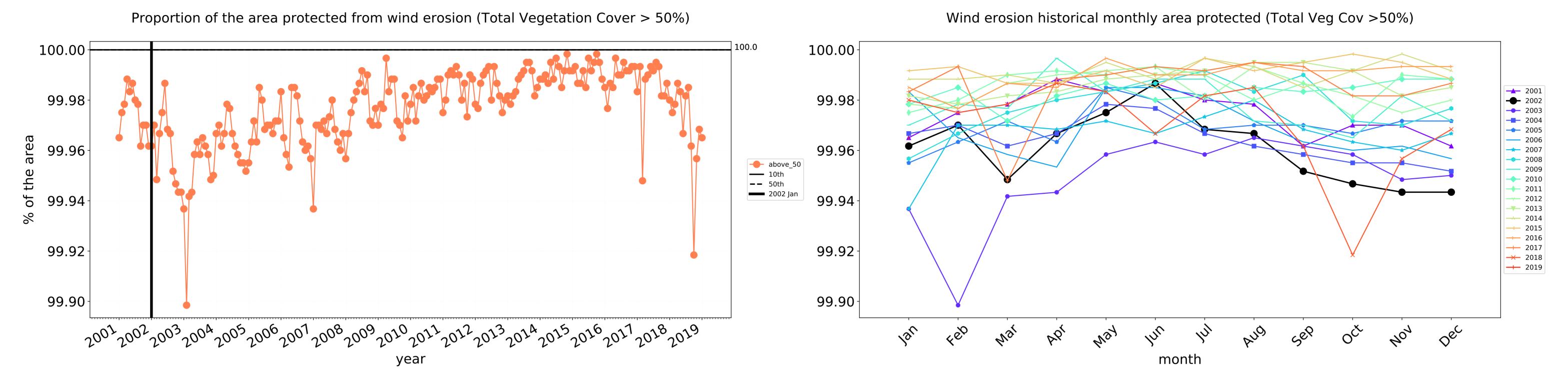


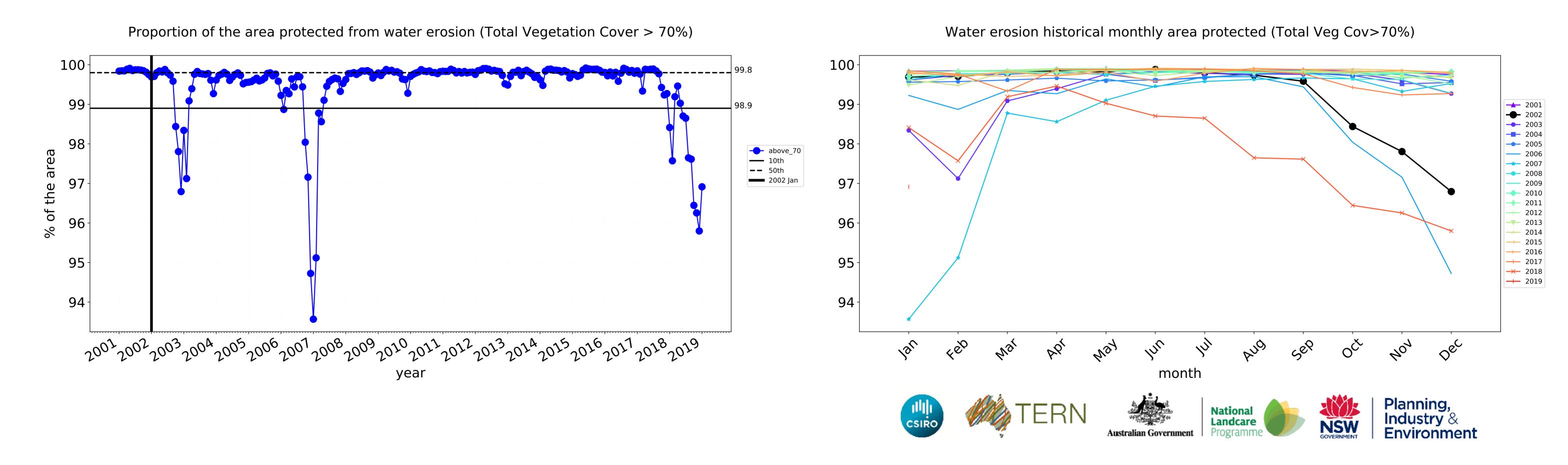


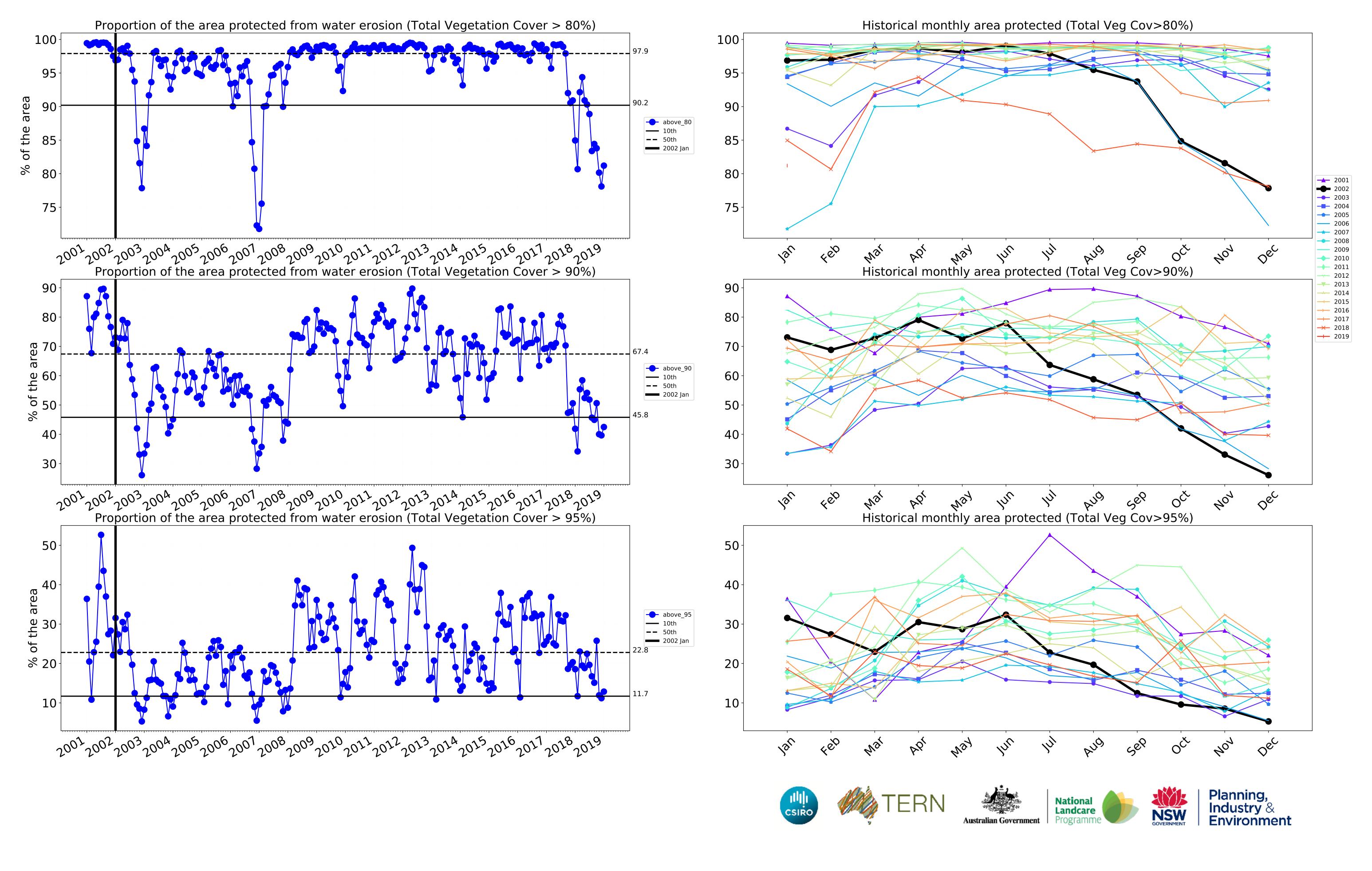




Grazing timeseries

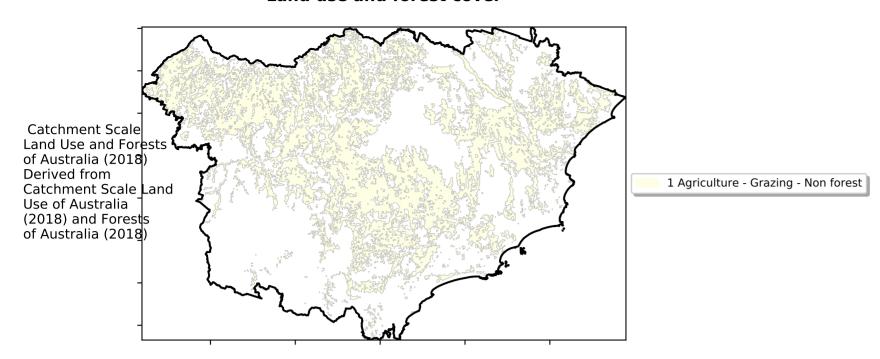




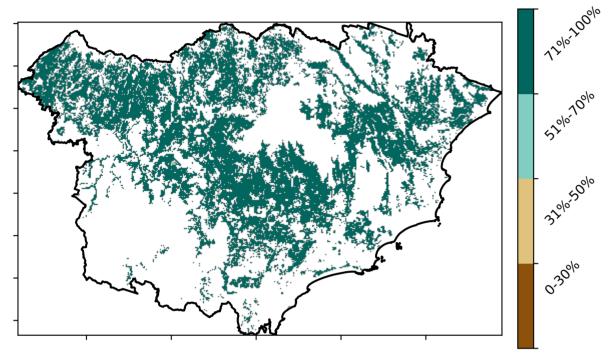


Grazing non forest

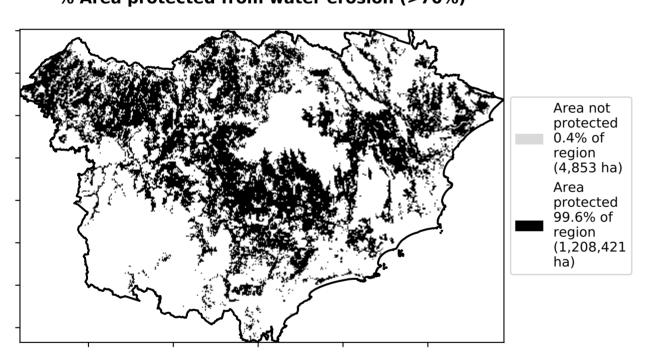
Land use and forest cover



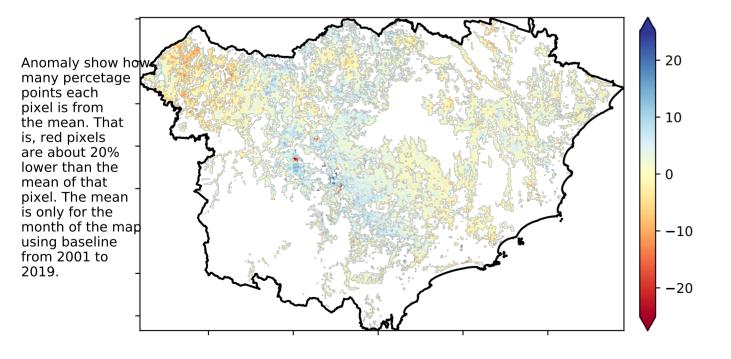
Total Vegetation Cover [%]



% Area protected from water erosion (>70%)

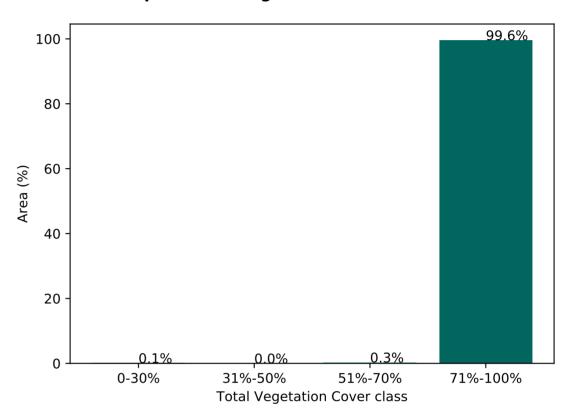


Total Vegetation Cover Anomaly [%]

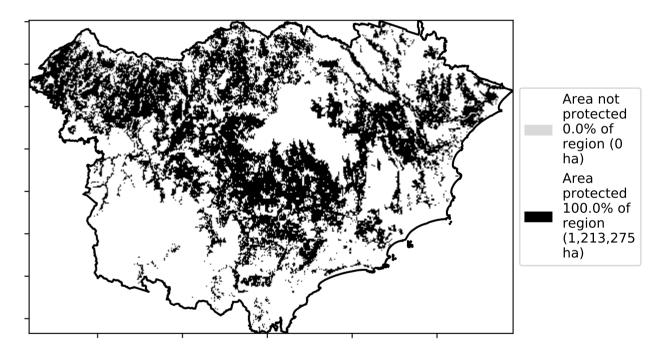


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

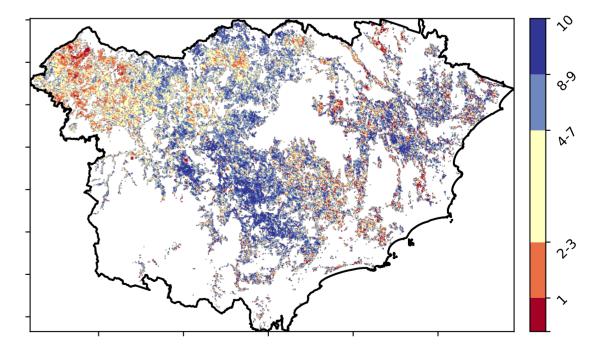
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]







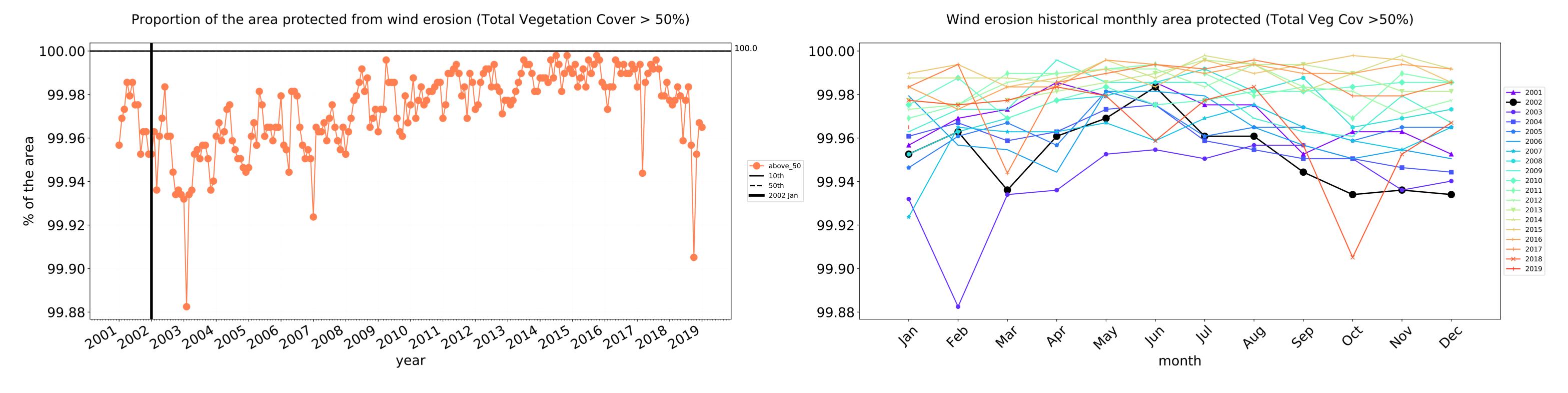


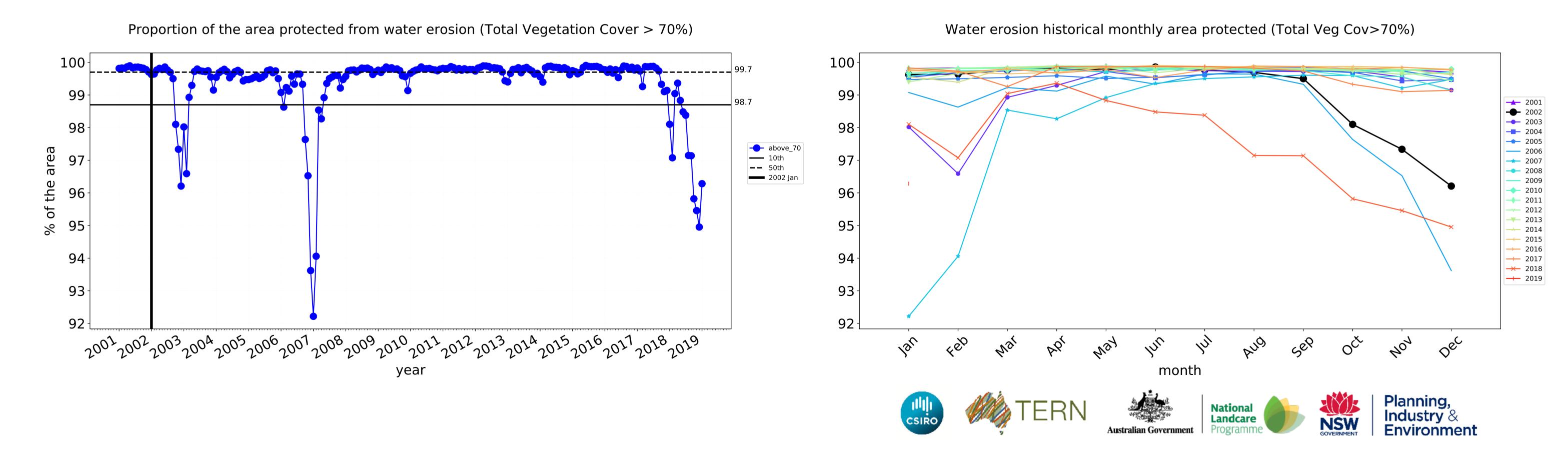


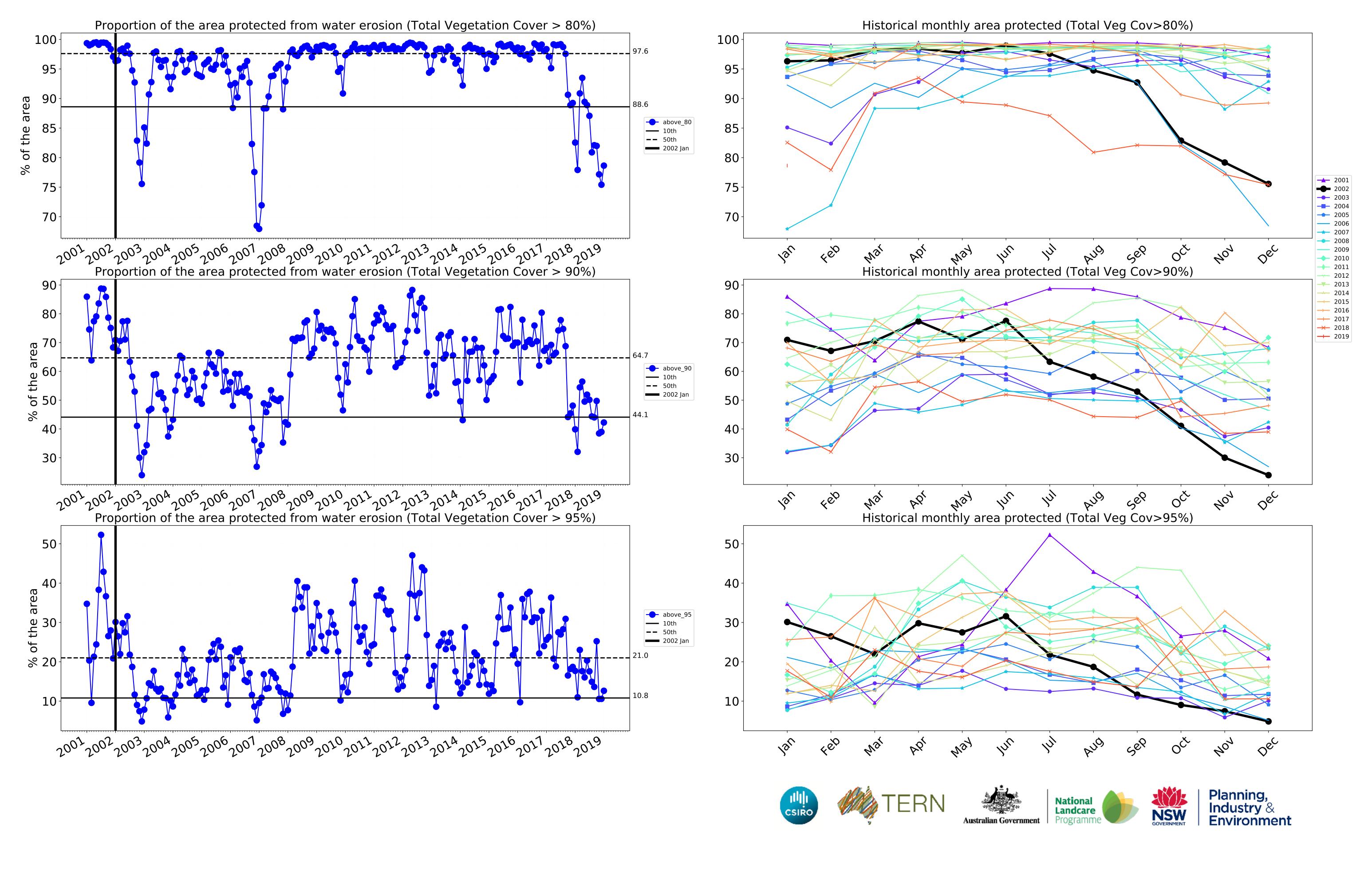




Grazing non forest timeseries





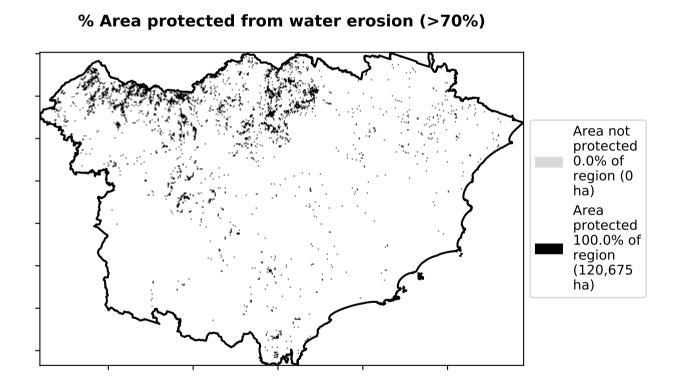


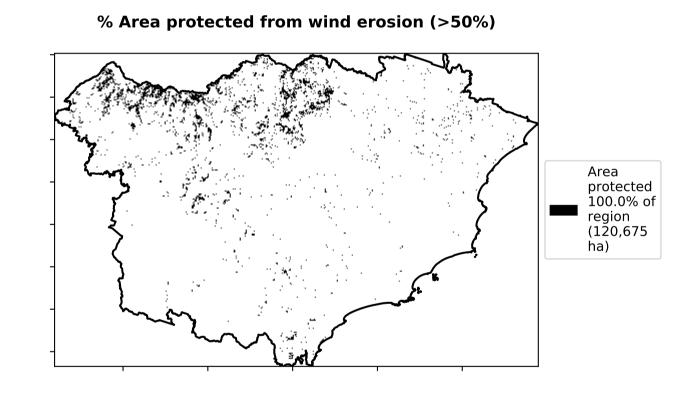
Grazing Woodland forest

Land use and forest cover Catchment Scale Land Use and Forests of Australia (2018) Derived from 1 Agriculture - Grazing - Woodland forest Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

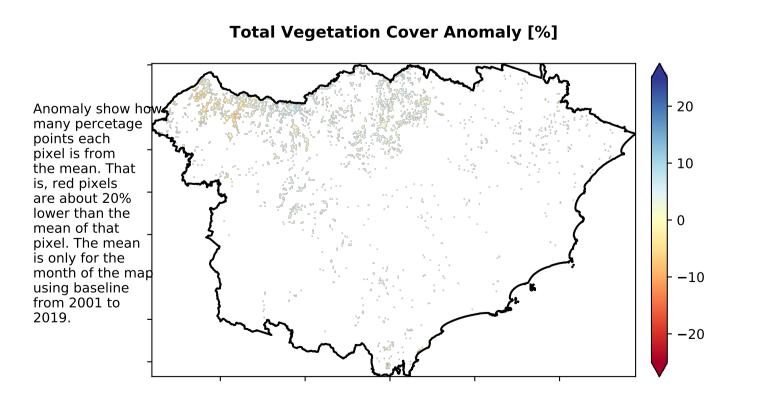
Total Vegetation Cover [%]

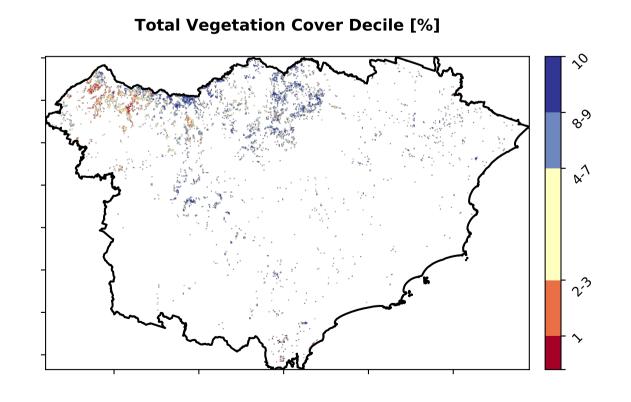
100.0% 100 Area (%) 60 40 20 -0.0% 0-30% 31%-50% 51%-70% 71%-100% **Total Vegetation Cover class**





Proportion of vegetation cover class in area









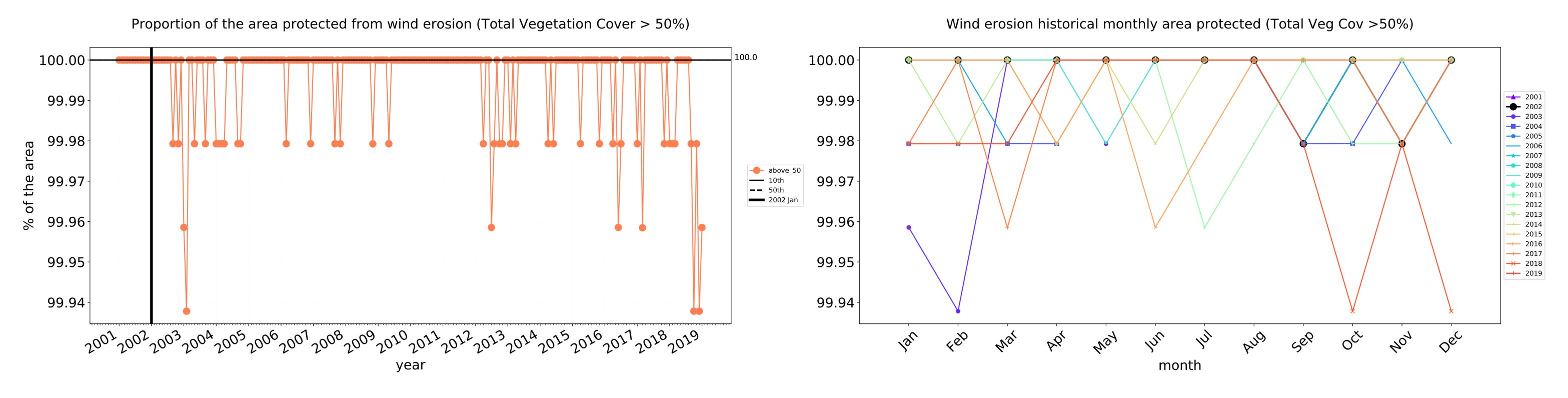


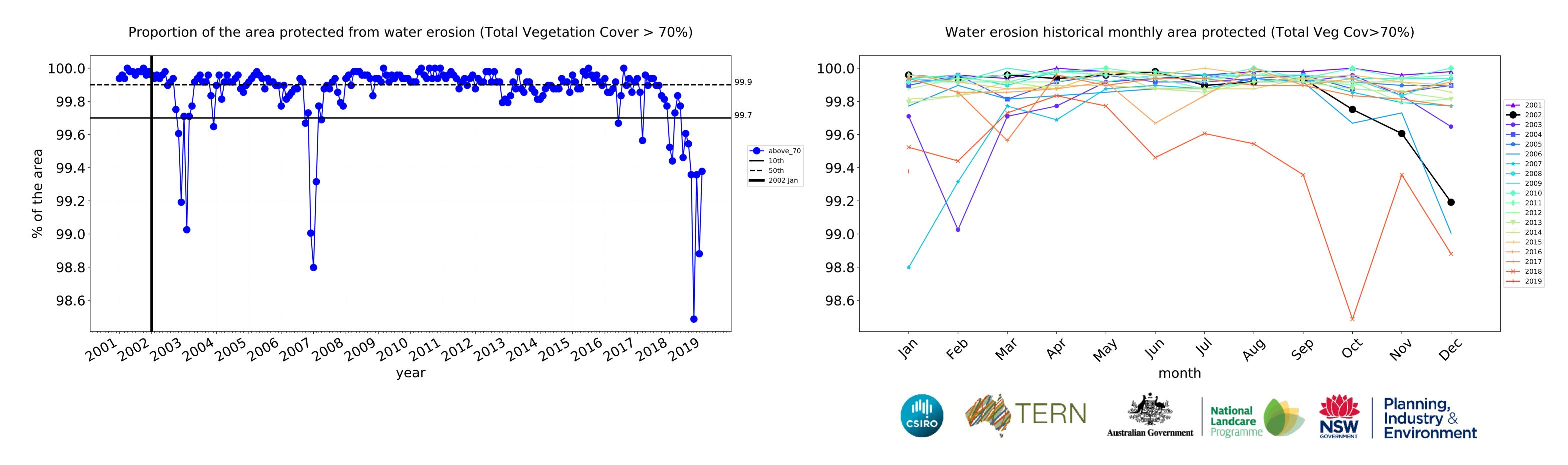


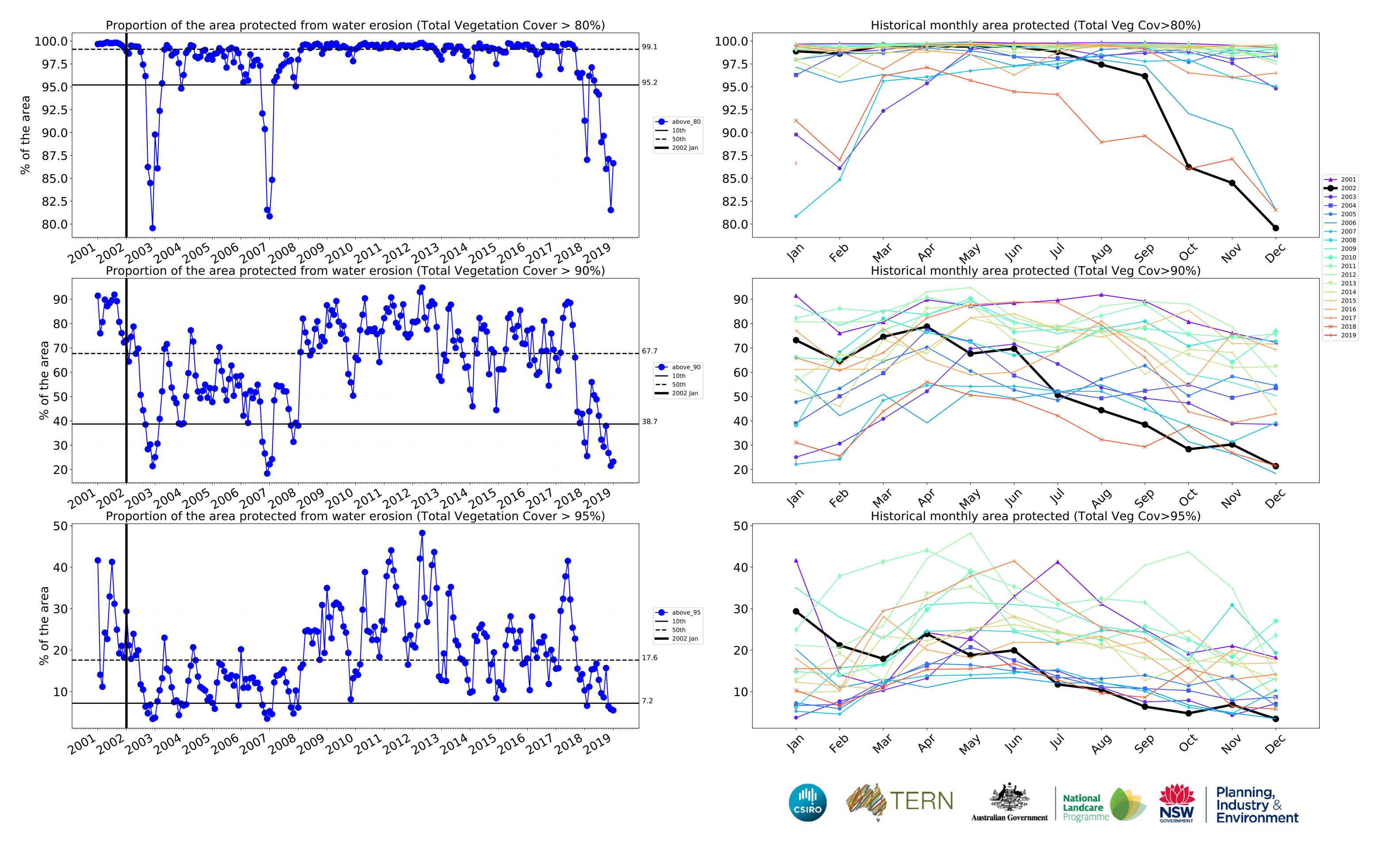




Grazing Woodland forest timeseries



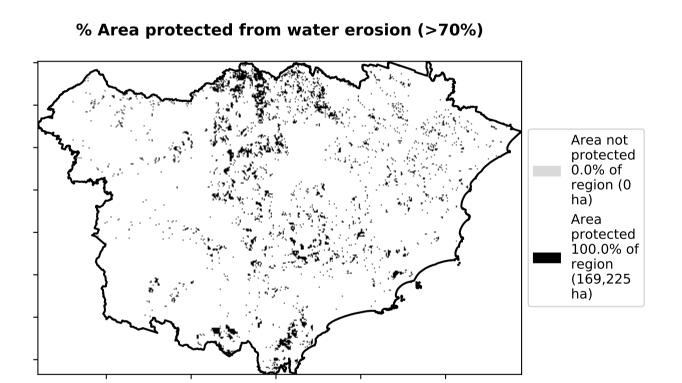


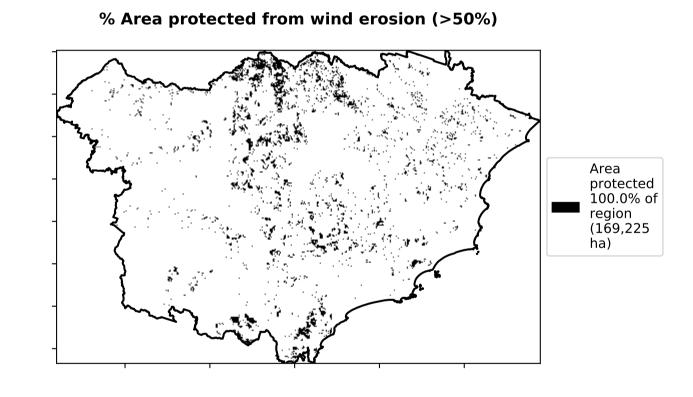


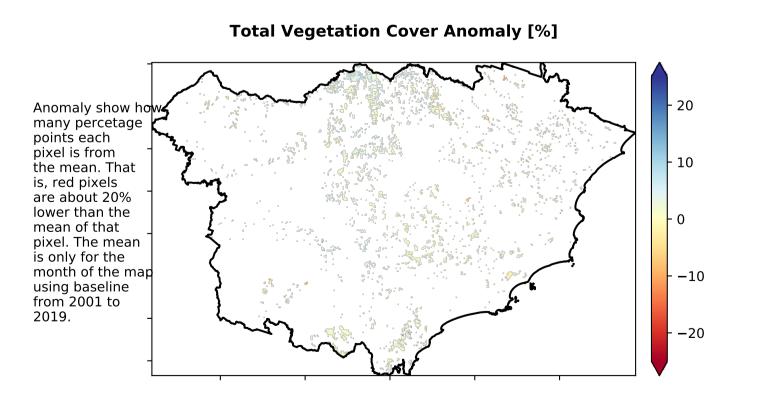
Grazing - Forest (non woodland)

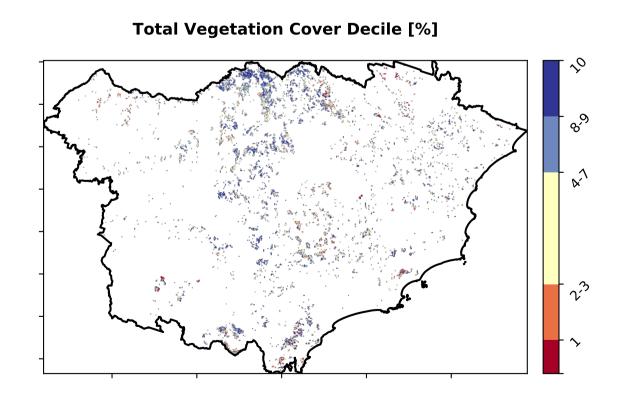
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) Australia (2018) Orived from Catchment Scale Scale Land Use of Australia (2018) 1 Agriculture - Grazing - Non-woodland forest of Australia (2018)

Total Vegetation Cover [%]











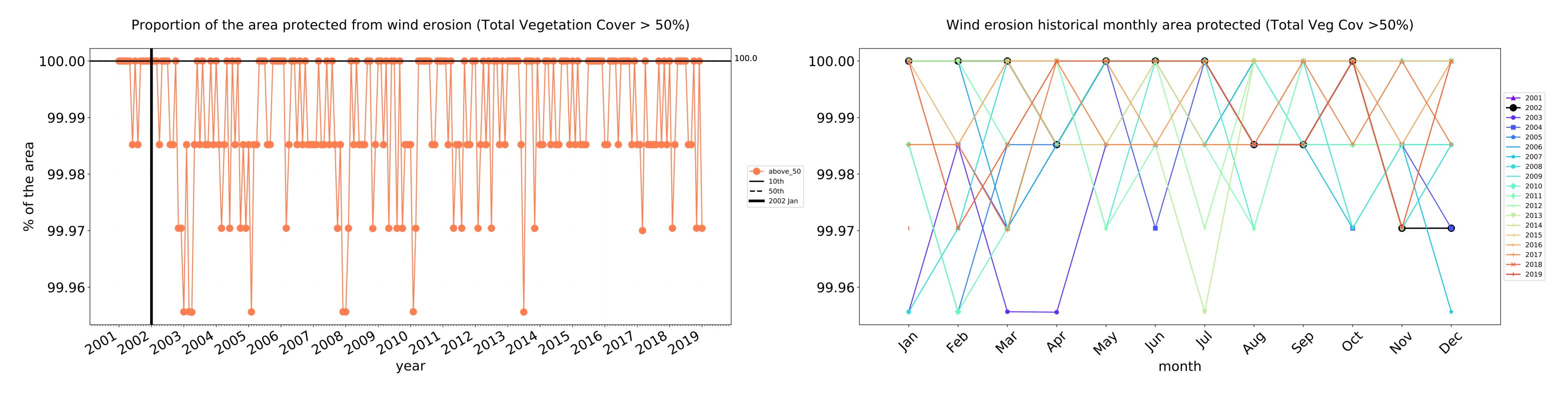


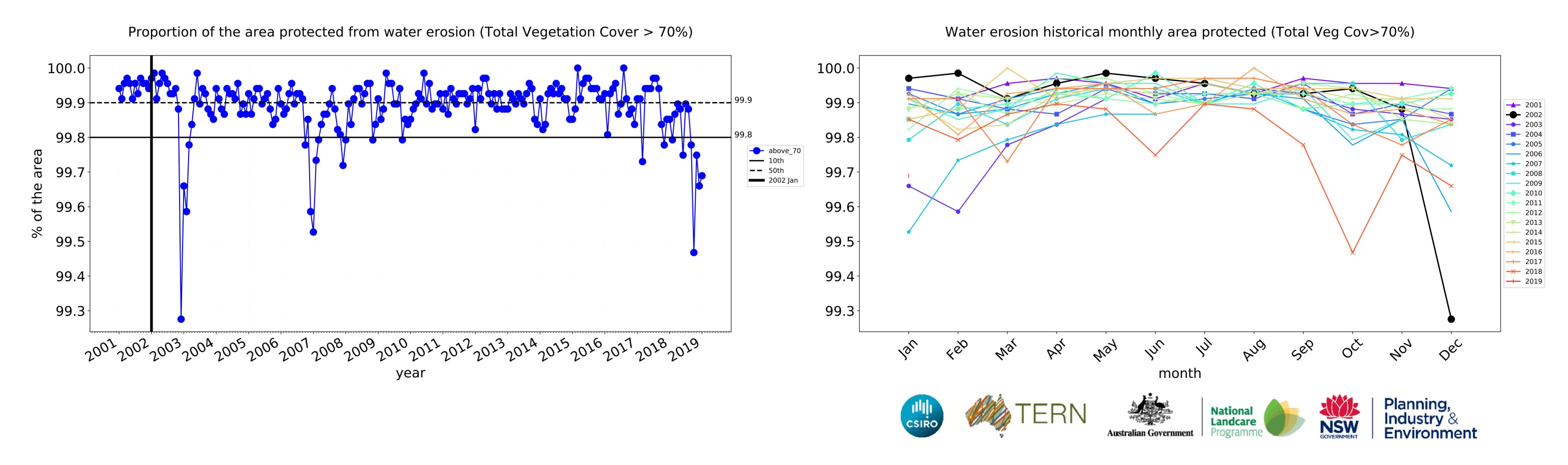


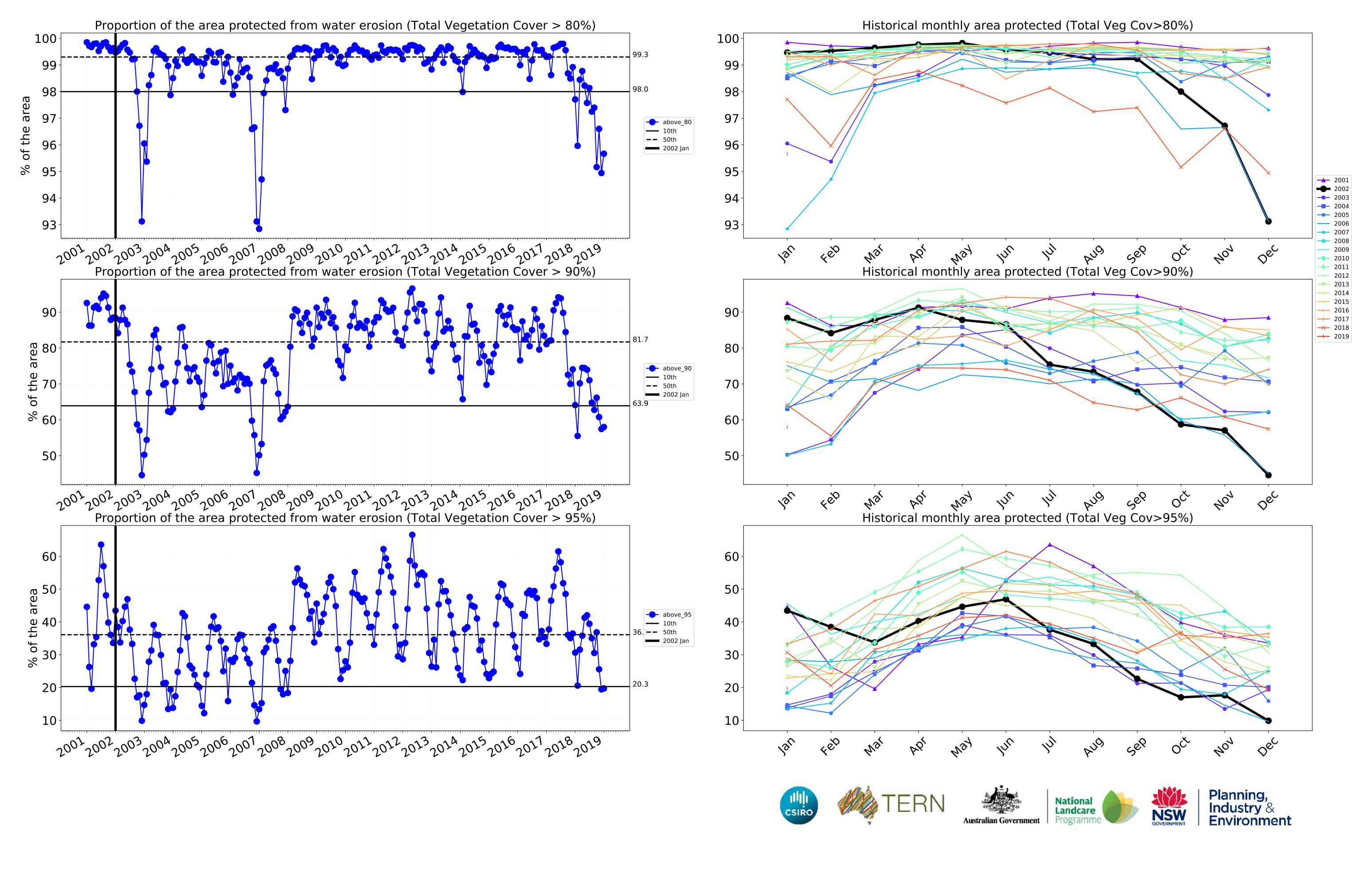






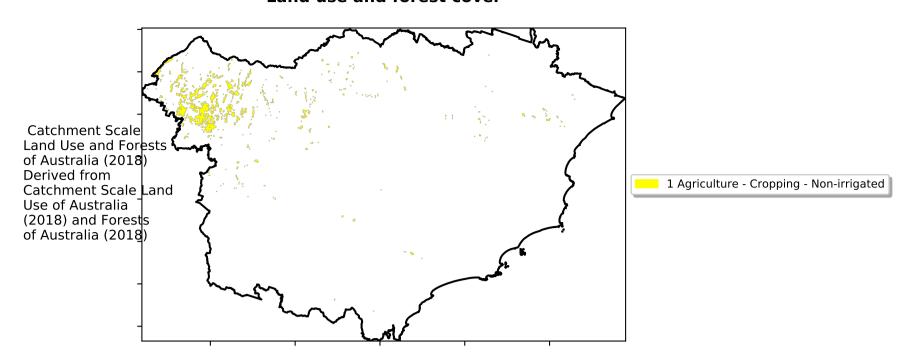




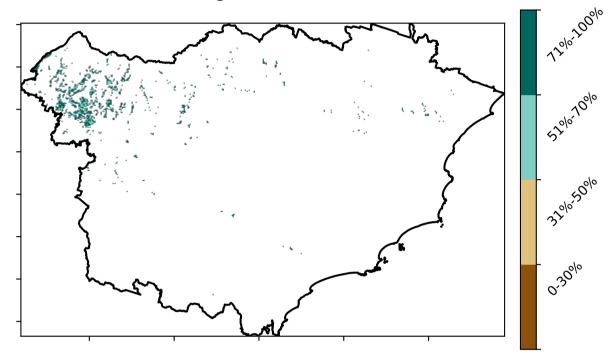


Cropping

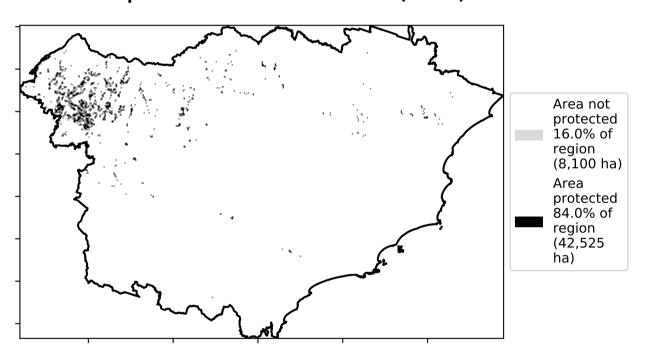
Land use and forest cover



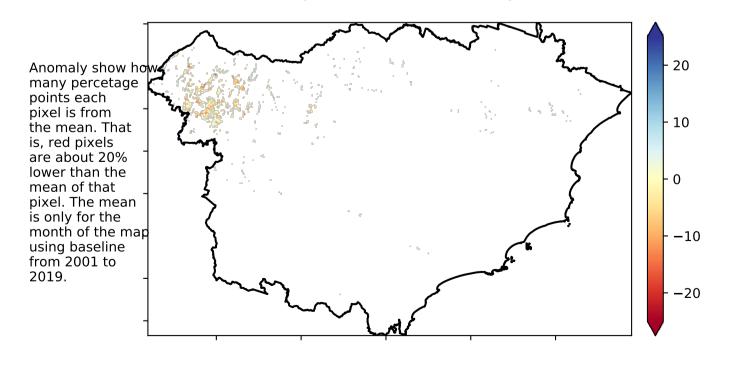
Total Vegetation Cover [%]



% Area protected from water erosion (>70%)

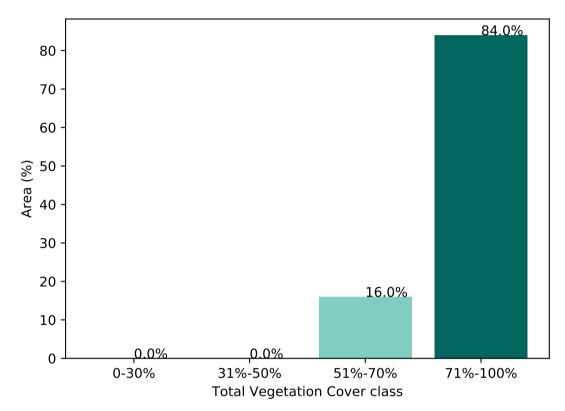


Total Vegetation Cover Anomaly [%]

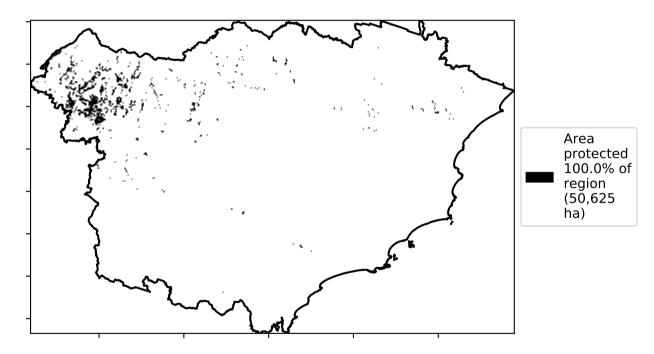


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

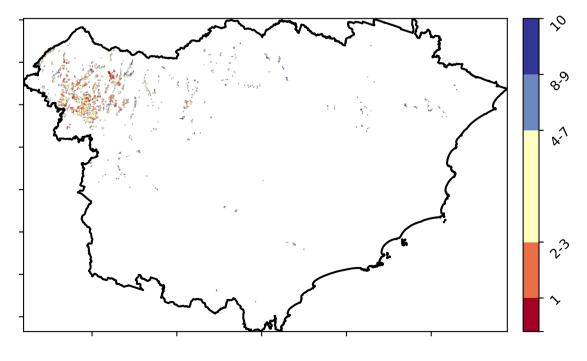
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]







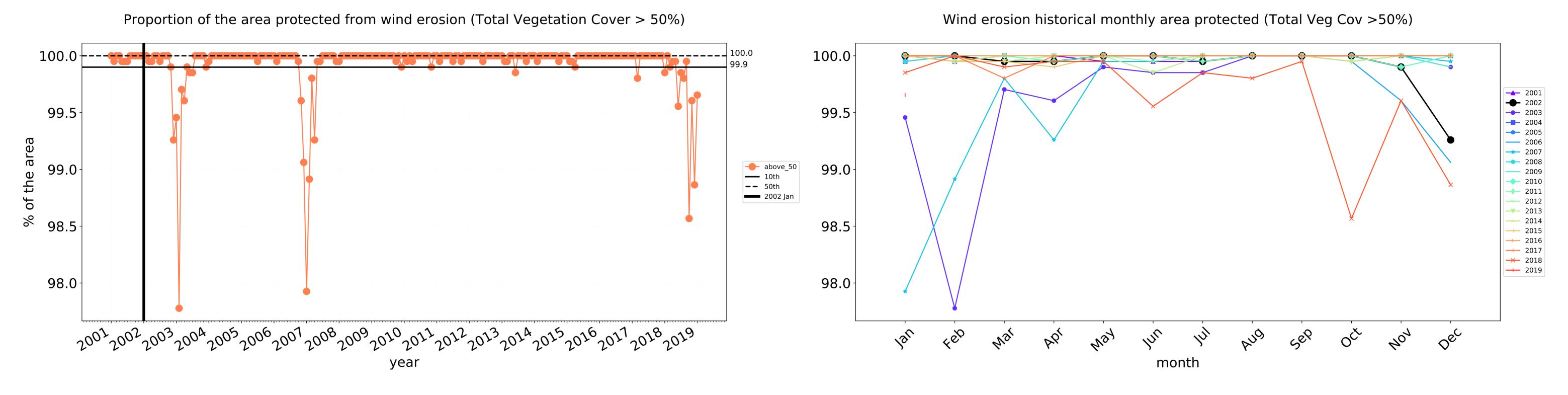


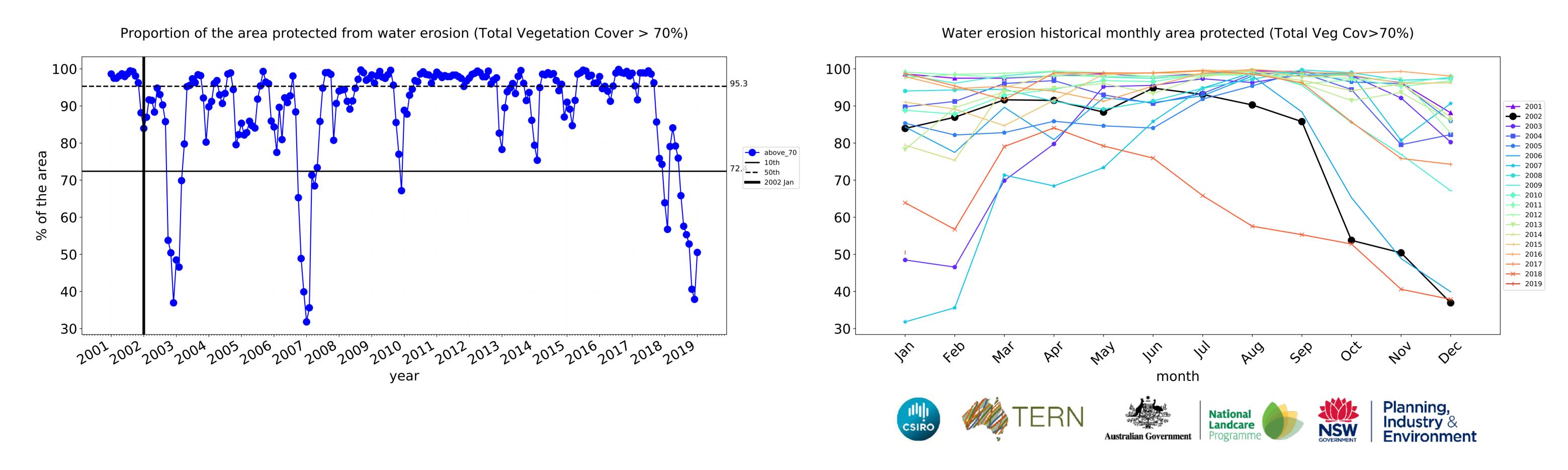


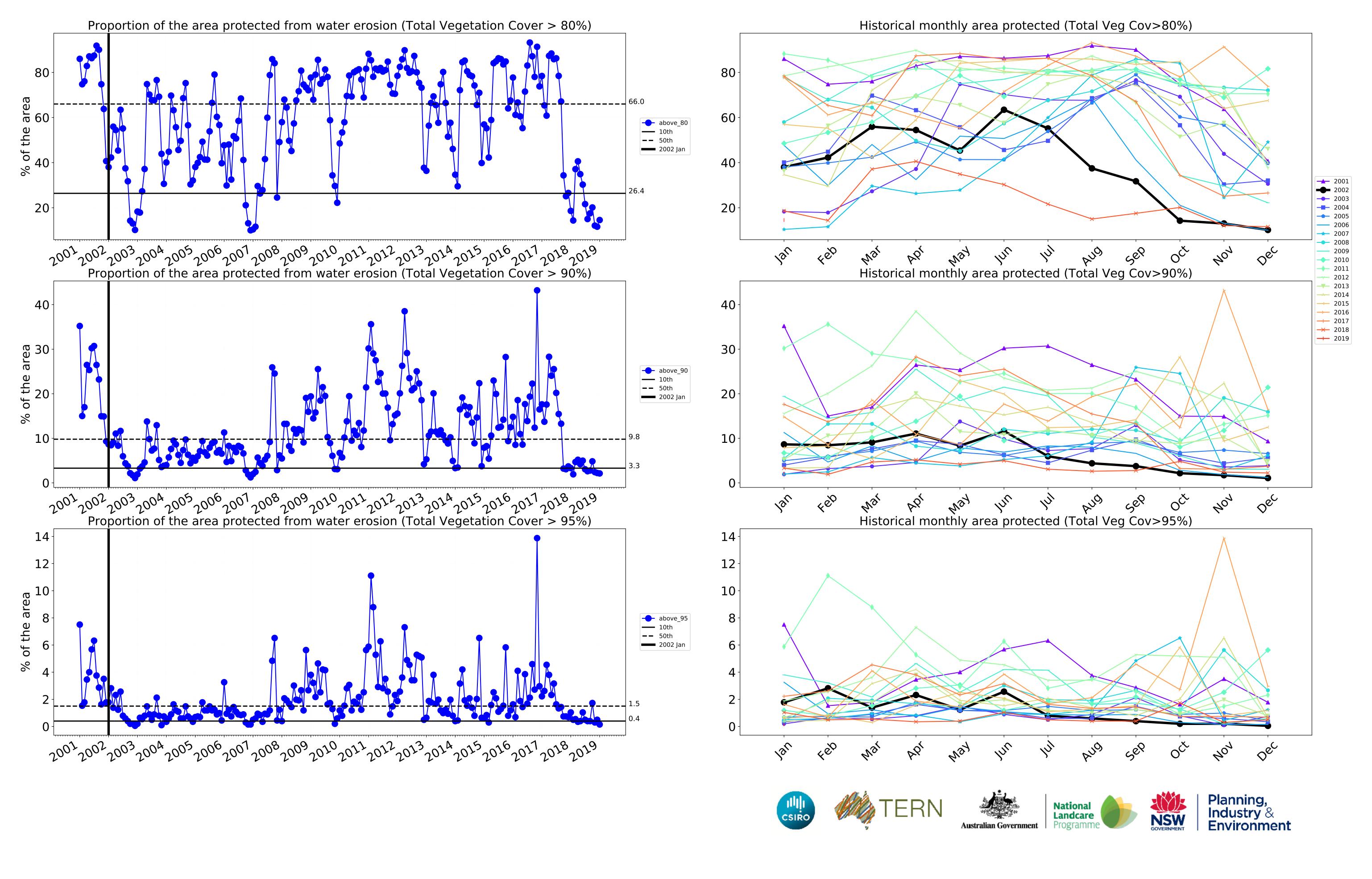




Cropping timeseries



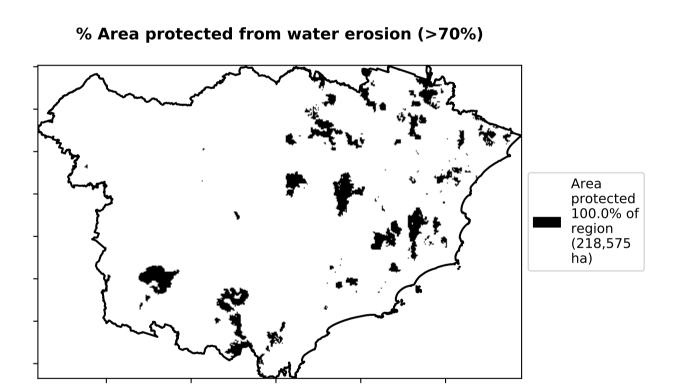


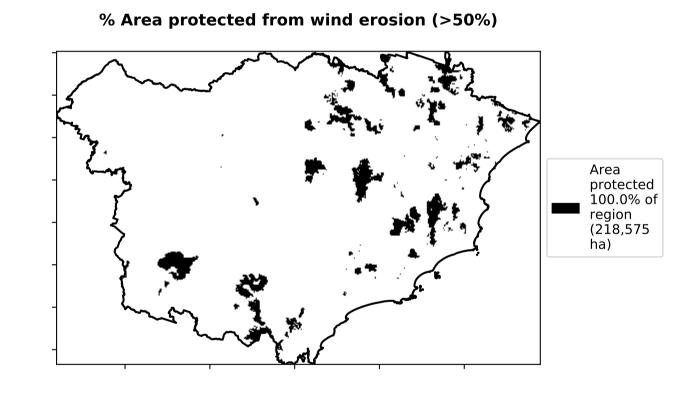


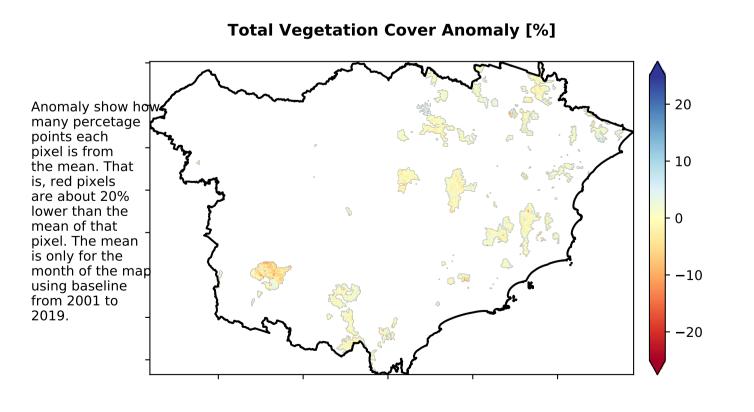
Production native forests and plantation forests

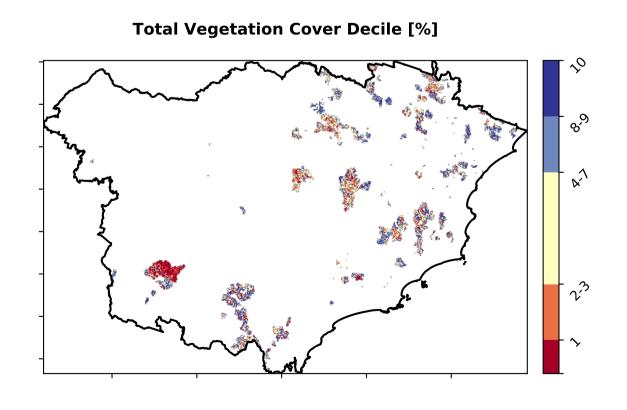
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018) and Forests of Australia (2018)

Total Vegetation Cover [%]













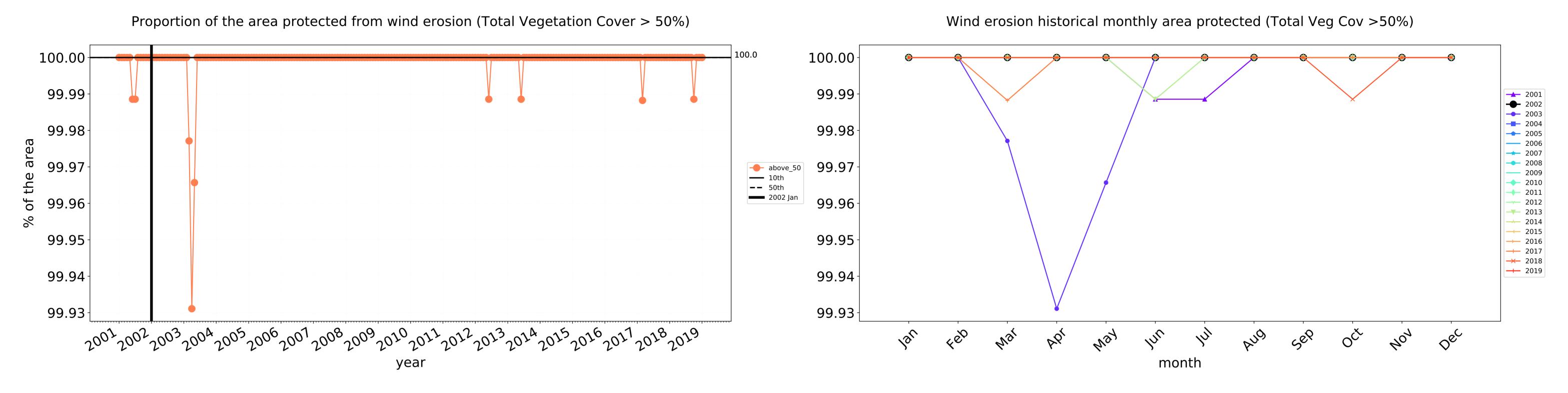


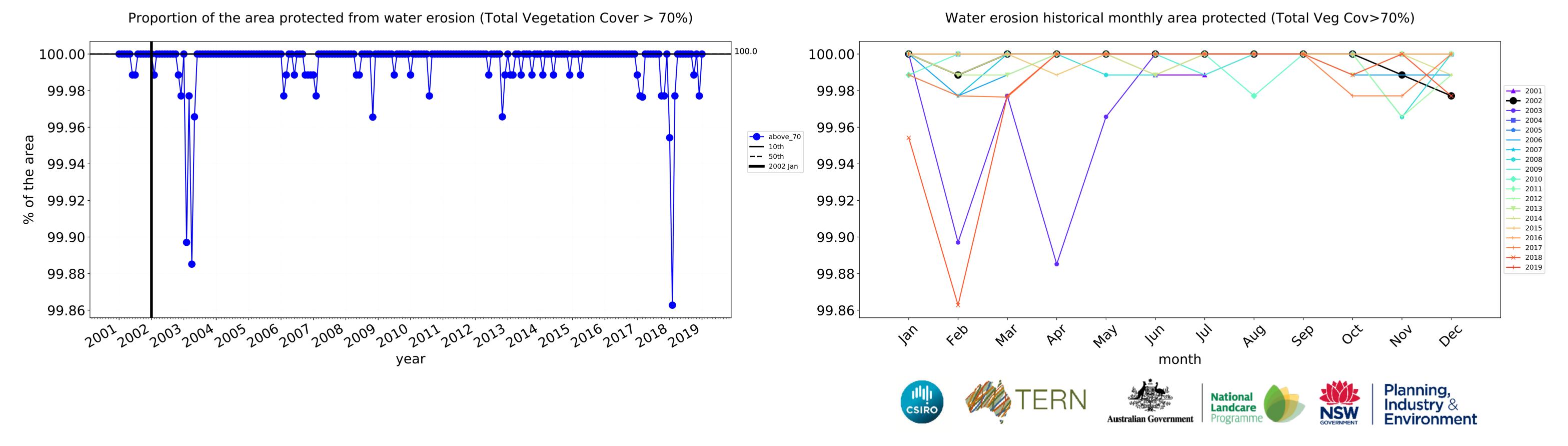


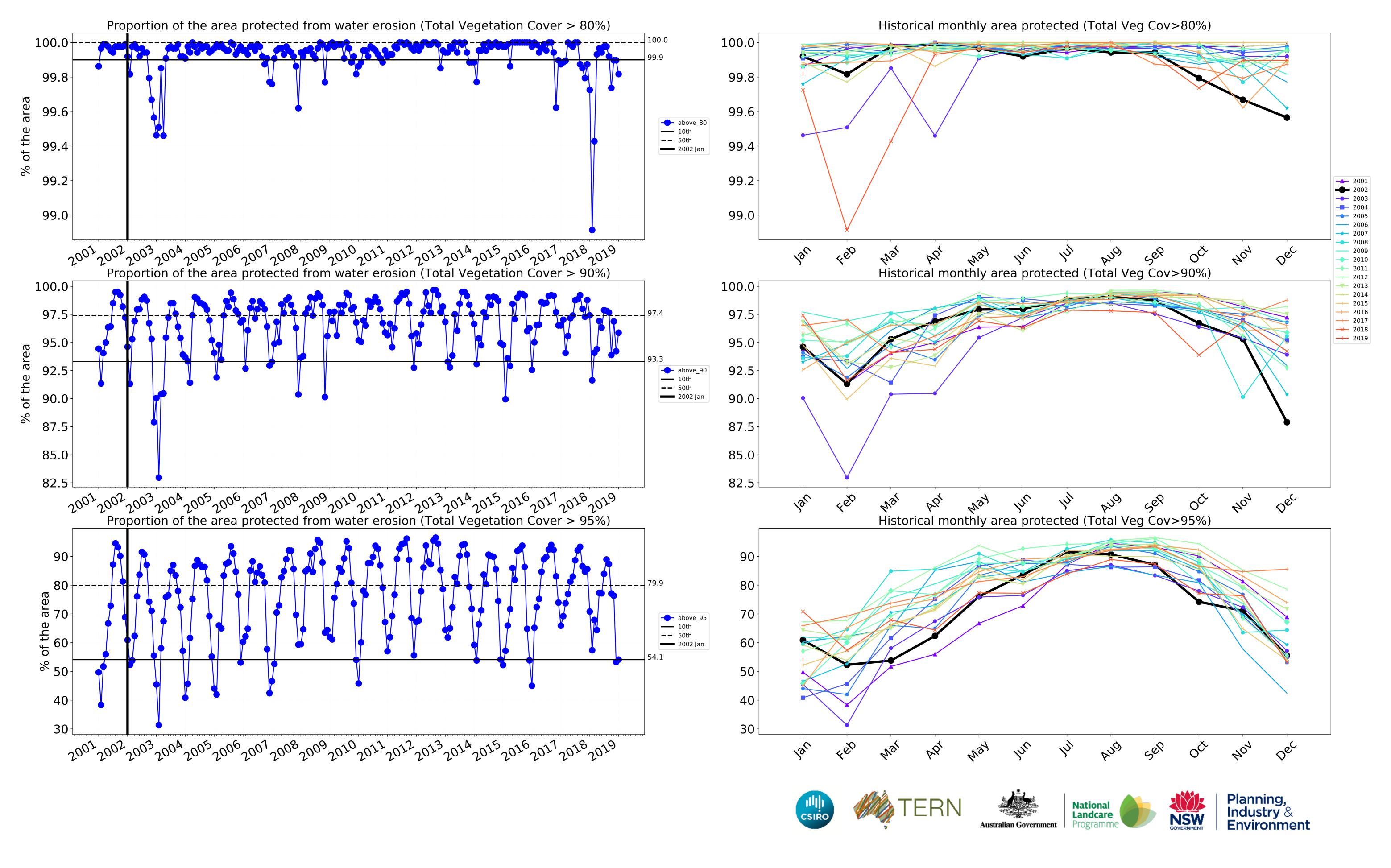




Production native forests and plantation forests timeseries







Hunter (3,238,925 ha and no data 61,500 ha) Percentage area and hectares protected with TVC threshold 30,50,70,80,90 and 95%

Land use and forest cover Class	area(ha)	above_30	above_50	above_70	above_80	above_90	above_95
Entire region	3,238,925	99.9% 3,236,430	99.8% 3,231,092	98.8% 3,198,789	95.3% 3,087,164	76.9% 2,490,849	39.0% 1,263,072
Conservation and natural environments	1,243,650	99.9% 1,242,225	99.8% 1,241,200	99.6% 1,238,600	98.6% 1,226,225	88.3% 1,097,625	50.2% 624,050
Conservation and natural environments non forest	31,850	95.6% 30,450	93.2% 29,675	89.3% 28,450	84.9% 27,050	64.9% 20,675	30.1% 9,575
Conservation and natural environments Woodland forest	139,150	100.0% 139,150	100.0% 139,125	99.9% 139,075	99.2% 138,000	86.8% 120,750	40.1% 55,800
Conservation and natural environments Forest (non woodland)	1,072,650	100.0% 1,072,625	100.0% 1,072,400	99.9% 1,071,075	98.9% 1,061,175	89.1% 956,200	52.1% 558,675
Agriculture	1,581,175	100.0% 1,581,150	100.0% 1,580,600	99.2% 1,568,025	94.7% 1,497,725	70.0% 1,107,050	30.1% 476,125
Grazing	1,503,175	100.0% 1,503,150	100.0% 1,502,600	99.7% 1,498,525	96.9% 1,456,075	73.1% 1,098,475	31.6% 474,375
Grazing non forest	1,213,275	100.0% 1,213,250	100.0% 1,212,700	99.6% 1,208,725	96.3% 1,168,425	70.9% 860,625	30.1% 365,425
Grazing Woodland forest	120,675	100.0% 120,675	100.0% 120,675	100.0% 120,625	98.9% 119,325	73.2% 88,300	29.4% 35,425
Grazing - Forest (non woodland)	169,225	100.0% 169,225	100.0% 169,225	100.0% 169,175	99.5% 168,325	88.4% 149,550	43.4% 73,525
Cropping	50,625	100.0% 50,625	100.0% 50,625	84.0% 42,500	38.0% 19,250	8.6% 4,375	1.8% 900
Production native forests and plantation forests	218,575	100.0% 218,575	100.0% 218,575	100.0% 218,575	99.9% 218,400	94.6% 206,800	60.9% 133,125











